A Clinical Lecture
ON
PERFORATION IN TYPHOID FEVER,
WITH AN ACCOUNT OF TWO CASES OF RECOVERY AFTER SURGICAL TREATMENT.

Delivered at St. Thomas's Hospital

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GENTLEMEN,—Perforation of the bowel in typhoid fever has been generally admitted to be one of the most terribly fatal of accidents. Until a few years ago the physician when he recognised its occurrence knew of nothing which could avert death and had to content himself with attempting to ease the patient's sufferings and with preparing the friends for the inevitable. It was of no consequence whether the accident was recognised early or late, or even at all, and the classical descriptions in the text-books applied rather to the terminal condition of the patient than to the symptoms and signs of perforation itself.

It is one of the greatest triumphs of modern surgery that by its means the lives of a no insignificant number of patients have now been saved from death by perforation. You see before you to-day two patients who have made a good recovery, having been operated on by my surgical colleague, Mr. W. H. Battle, shortly after the accident, which in both cases occurred during the height of the illness. We have now had at this hospital three successful cases out of nine operated on. At the Johns Hopkins Hospital six lives have been saved by operation out of 18. In the series collected by Finney[1]—a series including many cases in which surgical aid was called in too late—there are no fewer than 23 recoveries out of 112 cases operated on, and Dr. W. W. Keen[2] has published tables of 158 cases with 37 recoveries. When one takes into account the fact that in a large proportion of the cases operation has not been performed until more than 18 hours had elapsed since the perforation the number of successful cases must be considered as extremely encouraging.

It is not my intention to enter into details as to the treatment of perforation, for there is, in my opinion, no room for doubt that the only rational treatment is surgical, by laparotomy and suture, and accordingly does not come within my province. Physicians are all agreed that the medical treatment of this accident has scarcely ever succeeded in saving a patient's life, while laparotomy has already in a few years saved many lives. I am bound to draw special attention, however, to the fact that in but few of the modern text-books is it duly impressed on the reader that when perforation has occurred practically the sole chance of saving the life of the patient is early operation. Dr. J. Dreschfeld in his article in Allbutt's "System of Medicine," published, it is true, seven years ago, says, that while surgical interference has been suggested "it is very difficult to give the indications which render an operation likely to be successful." Dr. P. H. Pye-Smith in the latest edition of Fagge's "Text-book of the Principles and Practice of Medicine" conveys the impression that there is as little to be hoped from surgical as from medical treatment. He says: "Though the results (of surgical interference) are usually unsuccessful, they are perhaps not more so than of those of treatment by opium." A. Chantemesse[3] (1899) refers to some 30 cases in which laparotomy has been performed (not all certainly typhoid, the author says); "on compte, je crois, deux succès." Lancereaux and Paulesco[4] (1903) say: "La première indication est d'immobiliser l'intestin, le laudanum enfin," &c., thus teaching the new generation to persevere in the futile methods of the past. But I think the reason why few physicians have as yet become enthusiastic over surgical treatment for perforation is that they nearly always see these cases too late and they have not had any personal experience of the successful results which may be obtained from early operation. For myself, I am in complete agreement with the conclusions of Finney[5] when he says: "The only rational treatment of perforation is a surgical operation and to this there is no contra-indication save a moribund condition of the patient."

I want first to impress upon you that perforation is no uncommon accident. There is clear and unmistakable evidence that one out of every three or four deaths from typhoid fever is directly brought about through this complication. Everyone who is in general practice is certain to have to treat few or many cases of typhoid fever and the chances are that in one out of every 30 cases he has perforation will occur.

The frequency of perforation.—The statistics as to the frequency of perforation given even in the best text-books are mostly ancient and do not help us very much. They have been copied from one book to another and are of little value for this country. You will find it stated in numerous text-books on the authority of Murchison that out of 1721 necropsies the proportion of cases of perforation was 11·13 per cent., but if you go to the fountain head and consult Murchison's[6] own work you will see he mentions that among 412 necropsies in this country there were 80 cases of perforation, or 19·41 per cent., while among 1309 which he collected from French and German literature there were 116 or 8·8 per cent. From the available statistics it would seem that on the continent they have a much smaller proportion of cases of perforation than we have here, but we have to consider the disease as we meet with it in our own country. According to Hölscher[7] among 2000 necropsies on cases of typhoid fever at the Munich Pathological Institute there were only 114 cases of perforation or 5·7 per cent. Murchison met with 48 cases of perforation, or 3 per cent., among 1580 cases of typhoid fever, while Liebermeister[8] at Basle found only 1·3 per cent. among 2000 cases and Schulz[9] at Hamburg only 1·2 per cent. among 3686 cases. I shall not attempt to explain why the proportion of cases of perforation is so small in the continental statistics, but shall proceed to show you that here and in other English-speaking countries the accident is a more frequent one.

We have ready to our hand in the careful statistical reports of metropolitan hospitals thoroughly trustworthy information, the diagnosis in nearly every case having been verified by post-mortem examination. I give in tabular form below statistics obtained from four London hospitals:—

TABLE I.—*Giving Particulars relating to Typhoid Fever in Four London Hospitals.*

Hospital.	Years.	No. of cases.	No. of deaths.	No. of perforations.
St. Bartholomew's ...	1894-1901	1031	125	42
St. Thomas's	1887-1902	938	139	49
Middlesex...	1892-94-96-97-1900	349	36	14
Charing Cross...	1890-98	215	40	12
—	—	2533	340	117

It will be seen that there is a remarkable agreement between the results at the four hospitals. The mortality from all causes is 13·4 per cent. and from perforation 4·5 per cent. Three of the cases of perforation recovered after operation. In fully a third of the fatal cases perforation occurred. The statistical reports for the hospitals under the Metropolitan Asylums Board show that 5878 cases were admitted to the hospitals during the five years 1897-1901, among which there occurred 920 deaths and 189 cases of perforation. The mortality from all causes was 15·6 per cent. and from perforation 3·2 per cent. It is possible that post-mortem examinations are not so constantly made in the fatal cases

[1] Johns Hopkins Hospital Reports, vol. viii., 1900.
[2] Journal of the American Medical Association, January, 1900.
[3] Traité de Médecine, Paris, 1899.
[4] Ibid., 1903.
[5] Loc. cit.
[6] Continued Fevers, third edition, 1884.
[7] Münchener Medicinische Wochenschrift, 1891, Band xxxviii., 64.
[8] Ziemssen's Handbook, 1874, Band ii., Heft i., 161.
[9] Centralblatt für Allgemeine Pathologie, 1891, Band ii., 289.

as at the general hospitals and that, therefore, the frequency of perforation may be somewhat understated.

We may next compare these statistics with those of three hospitals in widely different parts of the world. At the Johns Hopkins Hospital, Baltimore, out of 829 cases treated by the cold-bath system during a period of ten years ending May 15th, 1899, there were 63 deaths and 23 cases of perforation (three of which, however, recovered after operation). At the Royal Victoria Hospital, Montreal, out of 620 cases treated on the cold-bath system during the seven years ending December, 1900, there were 34 deaths and 11 cases of perforation. At the Brisbane Hospital, Queensland, out of 1902 cases treated on the cold-bath system during the ten years ending December, 1896, there were 143 deaths and 56 cases of perforation.

TABLE II.—*Giving Particulars of Cases of Typhoid Fever treated in Canada, America, and Australia.*

No.	Hospital.	Years.	No. of cases.	No. of deaths.	No. of perforations.
1	Brisbane, Queensland.	1887-96	1902	143	56
2	Johns Hopkins, Baltimore, U.S.A.	1889-99	829	63	23
3	Royal Victoria, Montreal, Canada.	1894-1900	620	34	11
			3351	240	90
4	Johns Hopkins.	June, 1900, to June, 1902.	275	?	8
5	Brisbane (expectant treatment).	1882-86	586	85	17
	—	—	4212	—	115

In the case of the first four in the above list, as already mentioned, the cold-bath method of treatment was employed, and whether as the result of that or for other reasons the mortality at these hospitals is less than half what it is in our London hospitals. Still it will be observed that the proportion of cases of perforation to the fatal cases is about the same. For the first three the mortality is 7·1 per cent. and the proportion of perforation 2·7 per cent. of the cases. For the series of 4212 cases the proportion of perforation is 2·8 per cent.

Combining the statistics of the London hospitals with those of these other hospitals we get a series of 11,762 cases with 1500 deaths and 396 cases of perforation. Perforation occurred, therefore, in 3·3 per cent. of all the cases, or once in every 30 cases, and more than a fourth of the deaths were due to perforation. I think, therefore, that we shall not be far wrong if we conclude that in this country at any rate at least 25 per cent. of all deaths from typhoid fever are due to perforation. Here in London some 800 deaths from typhoid fever occur every year, while in England and Wales the number is about 5500.[10] Accordingly it is probable that some 200 deaths in London and 1500 in England and Wales occur every year from perforation. Probably 500 lives annually might be saved if cases of perforation were recognised early and were operated on by competent surgeons, of whom there is now no lack in all centres of population.

The type of the disease.—Although it is said to be more common for perforation to occur in cases of a severe or pronounced type it may happen in the very mildest form of the disease. According to Fitz, 25 per cent. of the cases of perforation occur in mild attacks of the disease. A good many instances of its occurrence in the ambulatory form of the disease have been recorded. Murchison relates the case of a man who walked a mile to the hospital and died from perforation within 30 hours. Another patient was attacked while digging. I find that among 81 cases in which the type of the fever is recorded 23 were severe, 11 were typical, 9 were of moderate severity, and 38, or nearly half, were mild. In this series, at any rate, there is a preponderance among the mild and moderate cases. Hæmorrhage has been a forerunner of perforation in a significant number of instances. Thus in 11 out of 60 cases perforation was preceded by considerable hæmorrhage. Hæmorrhage, therefore, should make us keep a sharp look-out for possible perforation.

Age and sex.—Age does not affect the liability to perforation, but sex does exercise an influence and the proportion of males to females is about 3 to 1.

Time of its occurrence.—Perforation may occur, as already mentioned, in the ambulatory form of typhoid fever or before the patient has felt ill enough to go to bed. In such cases it is very difficult to fix the exact period of the disease at which perforation has occurred. Perforation is, however, very rare before the ninth or tenth day of the illness. It is most frequent in the third week, especially towards its end, but is also common about the beginning of the fourth week. It is at this stage of the disease that you ought to be particularly watchful. After the fourth week the frequency lessens again, but during a relapse there is an increased risk of perforation, especially about the end of the second or beginning of the third week of the relapse. Of the two cases which we are considering, in the first perforation occurred on the tenth day of the first relapse and in the second on the eleventh day of the illness.

TABLE III.—*Showing the Time of Occurrence of Perforation in 300 Cases.*

Week.	Cases.	Percentage.
First	5	1·6
Second	57	19·0
Third	97	32·3 } 89·6
Fourth	55	18·3
Fifth	31	10·3
Sixth	23	7·6
Seventh	10	3·3
Later	22	7·3
Total	300	—

From this it will be seen that very nearly a third of all the cases have occurred in the third week and about 70 per cent. in the second, third, and fourth weeks. Mr. J. F. R. Gairdner[11] has recorded that out of 47 cases of perforation there were 23 during the stage of full activity and 24 when convalescence had been nearly or quite reached. There is probably about an equal chance of perforation happening after and before the end of the third week.

Site of perforation.—It is important to remember that the seat of perforation is most commonly in the last 12 inches of the ileum where ulceration is usually most severe. It is there accordingly that the surgeon will first look for a perforation. The small intestine may, however, give way higher up, the chance of which event rapidly diminishes as we get farther from the ileo-cæcal valve. In the large intestine, which is much less commonly perforated than the ileum, the sigmoid flexure appears to be the part most likely to give way. Sometimes perforation has occurred in the vermiform appendix or in a Meckel's diverticulum. As a rule there is but one perforation, but sometimes (15 per cent.) there are two, three, or more. In about half of the cases the perforation is of minute size. The part of intestine perforated was as follows in 264 cases: the jejunum in two cases; the ileum in 232 cases, or 87·8 per cent.; the large intestine in 22 cases; and the appendix in nine cases. In one case both the ileum and the large intestine were perforated. There were two perforations in 28 cases, three perforations in four cases, four perforations in one case, five perforations in three cases, and six or more perforations in six cases. In four cases mentioned by Fitz[12] the perforation occurred in a Meckel's diverticulum. In two-thirds of the cases the perforation was situated in the last foot of the ileum.

The symptoms of perforation.—The symptoms and signs of perforation are generally very summarily considered in the ordinary text-books. You are informed that the onset of

[10] In the United States, according to Dr. Hugh M. Taylor (New York Medical Journal, Feb. 1st, 1902), the death-rate from typhoid fever is 75,000 annually. It is probable, therefore, that 25,000 persons die from perforation every year in the United States.

[11] Glasgow Medical Journal, February, 1897.

[12] Boston Medical and Surgical Journal, Oct. 1st, 1891.

perforation is accompanied by acute pain, collapse, and perhaps rigors, and that the abdomen becomes distended and tender, the pulse small and rapid, and a fatal result soon ensues; or that perforation manifests itself by sudden pain in one part of the abdomen, followed by signs of general peritonitis, diffused abdominal pain, tenderness, distension, and collapse. Such descriptions, I fear, serve only to lead the student to expect that the signs and symptoms of perforation are the same as those of general peritonitis. But it is our aim to recognise perforation before there has been time for peritonitis to have developed and to prevent it. If you are going to wait until the signs of general peritonitis have supervened the time for doing anything likely to save the patient's life will be, as a rule, over and gone.

Usually the earliest and by far the most important and significant as well as the most constant symptom is abdominal pain—pain of more or less sudden onset, persistent but probably with paroxysmal exacerbations, generally severe, and sometimes agonising in its intensity. In some cases the pain is slight to begin with and gradually becomes worse, but a sudden acute onset is more usual. In both of our cases the pain was referred to the right iliac region, but, as a rule, the pain is not very definitely localised, although if referred to any particular part it is usually to the lower half of the abdomen below the level of the umbilicus. If it starts in one spot it tends later to diffuse itself and to become generalised. Sometimes the pain is referred to the bladder region or to the testicles, or to the end of the penis. Sometimes the pain appears to have followed some sudden movement. Sudden severe abdominal pain was observed as the first symptom of perforation in 68 out of 76 cases. Of the remaining eight cases in two there was pain but not of sudden onset, in two it was noted that there was very little pain, and in four there is no mention of pain as a symptom.

The next most frequent symptom is tenderness of the abdomen. The tenderness may be general, but often it is most marked over the lower half, especially on the right side. Tenderness is recorded in the notes in 28 out of 76 cases but it is probably much more constant a symptom than this would indicate, and except in those rare cases where there is a general absence of symptoms one does not find it mentioned that tenderness has been looked for and not found. In both of our cases tenderness was very marked. I should certainly regard perforation as improbable in a suspected case if tenderness were altogether absent.

Vomiting is a less common and less significant symptom than pain. Of our two patients both vomited, one almost immediately after the onset of pain, the other not until ten hours had elapsed. Vomiting is recorded as an early symptom in 22 out of 76 cases. It may come on only once, sooner or later, after the onset of pain, or it may be repeated several times. It is usually accompanied with nausea or there may be a feeling of nausea without actual sickness. Hiccough is a still less frequent symptom, but its occurrence equally with that of pain or vomiting indicates the necessity for a careful examination. Occasionally the onset of perforation is accompanied by looseness of the bowels which may act several times at short intervals. Sometimes there is a rigor or there is sweating. In some cases there are the usual symptoms of collapse or shock. Sometimes there is mental excitement.

The effect of perforation on the temperature is variable. In some cases it causes a marked fall; in others, especially when it occurs during an apyrexial period such as convalescence, it causes a rise. Sometimes a drop is followed by a rise and sometimes a rise is followed by a drop. The teaching of some authorities that a fall of temperature occurs in the great majority of cases is not supported by clinical experience. We regard an alteration of temperature associated with other symptoms as of some significance whether the change is upwards or downwards. Do not, however, consider a change of temperature is a necessary consequence of perforation. In our two patients it is to be observed that there was no marked alteration of temperature during the first few hours after perforation. In the first case the temperature remained steady during the first seven hours, but fell from 102·4° to 97·4° F. between the seventh and the tenth hour. In the second case, where operation was performed within six hours, there was no marked change.

More characteristic than a change of temperature is a change of the rate and character of the pulse. As a rule the pulse becomes more frequent and weaker. The change in the pulse is not usually immediate and the pulse should be observed every half-hour after the onset of the pain. If it is observed to become more rapid and to become running or thready such a change is highly significant when associated with other symptoms. Increased frequency of the pulse is, however, by no means always an immediate result of perforation. I would specially draw your attention to the fact that the rate of the pulse in the first case was constant at 95 from two hours to ten hours after the time of perforation. In the second case, however, the pulse-rate increased in frequency from 68 to 84 forty-five minutes after the time of perforation and to 104 three hours after. With increased rapidity of the pulse there is commonly increased frequency of the respirations which may be shallow or of a sighing character.

The facies of the patient sometimes affords decided help to diagnosis but only when we know it has altered with the occurrence of such symptoms as have been already considered. The presence of a pinched or anxious look or an expression of pain, depression of the angles of the mouth, sinking in of the eyes, blueness of the lips, and sweating are points which you may note as useful auxiliary signs. The decubitus is nearly always dorsal and the legs are usually drawn up.

In the recognition of perforation you must trust above all to what you are able to discover by your own examination by inspection, palpation, and percussion of the abdomen. You should always make a point of examining the abdomen at every visit when you have charge of a case of typhoid fever, for it is specially important to know whether there has been any marked change coincident with supposed perforation. Flaccidity, softness, and free abdominal respiratory movements are all reassuring signs, while distension, hardness, and absent or slight respiratory movements are, on the other hand, of bad omen. It is important to remember that you do not necessarily find a distended abdomen. If the abdomen is not distended previously, the mere occurrence of perforation will not produce any immediate distension. I consider a rigid retracted abdomen as just as significant as one that is tense and distended. You will always carefully percuss out the area of liver dulness. If you find it obliterated that does not necessarily mean that there is gas in the peritoneal cavity as it sometimes occurs where you have a distended colon in front of the liver. But it is an important aid to diagnosis in connexion with other signs. You will also carefully percuss the flanks and if you find dulness in the flanks gently turn the patient on one side and see if the dulness disappears on the other. Percuss the suprapubic region and be careful not to miss an over-full bladder. A rectal examination may also help.

In cases where there is no distension then one attaches the greatest importance to resistance, tenseness, or muscle spasm in the abdominal wall. In cases where there is distension one also expects to get a sense of resistance to palpation. In both conditions you generally find tenderness. The abdominal movements are usually considerably impaired but are seldom wholly absent as the direct result of perforation. Obliteration of liver dulness and signs of free fluid in the abdominal cavity are of value but are not always free from ambiguity.

It is necessary to say something about blood counts to which, however, I think undue importance has lately been attached in relation to acute abdominal affections. Leucocytosis has been observed quickly to follow the onset of perforation in a considerable number of cases. As is now well known from the work of Thayer, Cabot, and others, in uncomplicated typhoid fever the leucocyte count as a rule is low. Cabot[13] states that of 1000 cases in which the blood was examined on entering hospital 69·3 per cent. had a count of less than 7000 per cubic millimetre and 97 per cent. had less than 11,000, and from Thayer's observations it appears that as the disease progresses the leucocyte count falls. With the onset, however, of any inflammatory complication a decided increase in the number of leucocytes is usually to be observed. Perforation is one of the complications which may give rise to it, but others are phlebitis, otitis media, secondary septic infection, cholecystitis, &c. Leucocytosis has been, moreover, absent in observed cases of perforation especially in very exhausted patients. According to Cabot leucocytosis occasionally occurs when no complication is present as far as can be ascertained during life. While we may consider leucocytosis as a useful confirmatory sign it

[13] Clinical Examination of the Blood, fourth edition, 1901.

would be a mistake to place implicit reliance on its presence or absence in a doubtful case. One cannot expect at present that blood counts will be made in typhoid fever except in hospitals. For the sake of completeness I regret that no blood counts were made in either of our two cases, but, as I have indicated, I do not attach much weight to leucocytosis or its absence as an aid to diagnosis. In two recorded cases there was a relative leucocytosis up to the time of perforation when there was a decided diminution.

Diagnosis.—We must not expect that we shall be able to recognise the occurrence of perforation every time it happens. Sometimes it gives rise to no characteristic symptoms. It may occur in a patient already prostrate and more or less unconscious and we cannot know of it until the necropsy reveals it. It is some consolation, however, that symptoms are most likely to be absent in the least favourable for operation. Dr. Thomas McCrae records that in one of his cases there was "no drop in temperature, no especial increase in rapidity of pulse, no nausea or vomiting, no symptoms of collapse, no obliteration of liver dulness, no muscle spasm, no marked diminution of respiratory movements, no leucocytosis." In such a case a diagnosis of perforation is impossible.

We must also be prepared for mistakes in diagnosis. In not a few cases has laparotomy been performed for suspected perforation when none existed. It is satisfactory to learn that no harm appears to have resulted as a rule, but it is a mistake which all of us would wish to avoid. Professor James Stewart[14] reports the case of a male, aged 25 years, who on the fifteenth day of illness was seized with abdominal pain increasing in severity accompanied with abdominal tenderness, especially over the left inguinal region. Abdominal distension, rigidity, with disappearance of liver dulness were made out later. The abdomen was opened, no perforation was found, and the patient made a good recovery. Dr. H. Cushing[15] relates a similar case. During a relapse a girl, aged 15 years, was seized with sudden pain, vomiting, and distension. No perforation and no sign of peritonitis were found on laparotomy. No ill-effects, however, followed the operation and the relapse followed the ordinary course, ending in recovery. We have had one case of this kind at St. Thomas's Hospital in 1900. Perforation was suspected and laparotomy was performed but no perforation was found and there were no signs of peritonitis, but there was a gangrenous patch close to the ileo-cæcal valve.

It is the sudden onset of acute abdominal pain which most usually gives rise to the suspicion of perforation and it is needless to say that acute abdominal pain may suddenly come on from many different causes apart from perforation. All that one would insist on is that when pain comes on the possibility of perforation should be carefully and thoughtfully considered. I would direct especial attention to a valuable study of abdominal pain in typhoid fever by Dr. McCrae[16] of the Johns Hopkins Hospital. Dr. McCrae observed that in 161 out of 500 cases, or 32·2 per cent., abdominal pain was present at some period of the attack other than the onset. In 13 of these the pain was due to perforation, in 13 it was associated with hæmorrhage, in 65 it could be attributed to some known cause, but in no fewer than 70 cases there was no discoverable cause for the pain. Fortunately, in the majority of these the pain was neither very severe nor of long duration. In 14 cases, however, besides pain there were other abdominal symptoms and leucocytosis and all these cases were the cause of much anxiety. Two patients were operated on without any perforation being found, and two died but nothing to explain the pain was discovered.

Peritonitis without perforation.—When peritonitis occurs without perforation there is great difficulty in making a correct differential diagnosis. The usual absence of any acute sudden onset of pain is perhaps the only point of distinction on which we can lay stress. When, however, non-perforative peritonitis commences with sudden acute pain we can scarcely hope to be able to distinguish it from perforation. No doubt a good many cases of this kind have been operated on as we find not a few recorded in literature. Dr. Cushing[17] has drawn attention to what he has called the pre-perforative stage of ulceration in which a limited inflammation of the serosa occurs prior to perforation. He strongly advocates operative treatment at this stage. If we could know that perforation was inevitable in such cases then there could be no doubt as to the necessity for operation. But I do not think that we are justified in recommending laparotomy unless it is our belief that perforation has already taken place.

Appendicitis.—It is, I consider, impossible to make a differential diagnosis between perforation of the appendix and perforation of a neighbouring part of the intestine, nor is it a matter of any importance that one should be able to do so. The surgeon will, of course, always examine the appendix should a perforation not be discovered in the ileum near the ileo-cæcal valve.

Hæmorrhage.—Not uncommonly intestinal hæmorrhage is associated with abdominal pain. When with pain there is marked collapse perforation will very likely be suspected. In certain cases perforation and hæmorrhage are associated. These cases are extremely difficult. The question is usually whether the hæmorrhage has been profuse enough to account for the condition of collapse or shock. If the hæmorrhage be severe there will be blanching of the lips and marked diminution in the number of red corpuscles as well as increase in the number of leucocytes. If there are symptoms and signs pointing to perforation we must not be misled because there has also been hæmorrhage.

Cholecystitis is characterised by abdominal pain, but the pain is referred to the right hypochondrium. The pain may be extremely severe, as in a case reported by Da Costa where the patient, a child, eight years of age, frequently shrieked out on account of it. There is tenderness in the region of the gall-bladder usually most intense a little above and to the right of the umbilicus, and with the tenderness muscular rigidity may be made out. A palpable tumour, the enlarged gall-bladder, can be detected in many cases. A slight degree of jaundice may be observed or bile may be discovered in the urine. Leucocytosis may be present. The seat of the pain and tenderness and the presence of a palpable rounded tumour are the most important points in diagnosis.

Perforation of the gall-bladder will in many cases be difficult or impossible to distinguish from perforation of intestine. It is important, however, that the distinction should be made for an abdominal incision in the right hypochondrium is the proper position for an exploration of the gall-bladder region. If there have been symptoms of cholecystitis then the diagnosis of perforation of the gall-bladder may be made on the occurrence of such symptoms as have been mentioned as characterising the onset of perforation of intestine. Intense pain in the region of the gall-bladder generally occurs at the onset of perforation.

Biliary colic due to gall-stones might give rise to a suspicion of perforation. The site and character of the pain, the absence of muscle spasm, and the character of the pulse would help the diagnosis.

Thrombosis of the iliac veins has sometimes closely simulated perforation and more than one such case has been recorded where perforation has been suspected and laparotomy has been performed. It gives rise to severe abdominal pain of sudden onset, with vomiting and nausea. Leucocytosis is usually well marked. Muscle spasm and superficial tenderness will, however, be absent and it will probably be found that there has been some evidence of previous thrombosis of one or other femoral, shown by pain and tenderness in the femoral or iliac region, together with some œdema of the limb on the affected side.

Pneumonia sometimes gives rise to pain referred to the abdomen and the onset of pain may be preceded by vomiting and a rigor. The pain, however, is usually attended by a catch in the breath and the respirations are rapid and shallow. Physical examination of the lungs will probably reveal the presence of abnormal signs, while the abdomen will be found free from rigidity and local tenderness.

Conclusions.—Every case of typhoid fever should be looked on as one of possible perforation, for which emergency the medical man in attendance should be from an early stage of the illness thoroughly prepared and have all in train for prompt action. In a hospital there ought to be no difficulty in having the operation performed without delay once the diagnosis is made. In private practice, however, much time, every moment of which is of importance, may be lost unless the practitioner has made all the necessary arrangements beforehand, and has seen to it that he can quickly obtain the services of a competent surgeon. In order that the operation may be successful the sooner it is performed after the occurrence of perforation the better and an early diagnosis is accordingly of the greatest importance.

I strongly recommend you to study the schedule of

[14] Brit. Med. Jour., vol. i., 1901, p. 1463.
[15] Johns Hopkins Hospital Reports, vol. viii., 1900.
[16] New York Medical Journal, May 4th, 1901.
[17] Loc. cit.

specific instructions to be followed in cases of typhoid fever drawn up by Professor Osler[15] of Baltimore, to whom we owe much for his most practical observations on perforation and perforative peritonitis in typhoid fever. The following schedule is Dr. Osler's with slight modifications. 1. Every nurse in attendance on a case of typhoid fever should have precise and definite orders at once to report to the medical man in charge if the patient should complain of abdominal pain or vomit or hiccough, or if there be a sudden change in the rate or character of the pulse or respiration, or evidence of collapse. If there be pain, vomiting, hiccough, or collapse she should specially note the character and rate of the pulse, take the temperature, observe the patient's expression, and inquire into the seat and nature of the pain. She may endeavour to relieve the pain by the application of hot fomentations, &c. 2. The medical man when he arrives will note the same points, with special reference to the mode of onset and character of the pain and will particularly observe the state of the abdomen: (1) whether distended, flat, or retracted; if there be distension, whether uniform and general or localised; (2) the presence or absence of respiratory movements of the abdominal wall, both above and below the umbilicus; (3) the presence or absence of tenderness and its extent and of rigidity or muscle spasm; and (4) the extent of liver dulness and the presence or absence of dulness in the flanks. He may also make a rectal examination for tenderness or fulness between the bladder and the rectum. In addition he will note (1) the facies, pallor and sweating; (2) the pulse, its rhythm, rate, and force, and repeat his observations at short intervals; (3) the temperature; (4) the respiration, its frequency and character; and (5) a blood count may be helpful.

If the medical man in charge suspects perforation he will do well to summon at once the surgeon he has already selected as the operator and to complete the necessary arrangements for operation, and he will probably also wish to summon a physician to share the responsibility of the diagnosis. He will see to it that as a provision against shock there is a sufficiency of hot-water bottles, blankets, and stimulants; that there are plenty of basins and towels and a good supply of hot recently boiled water; that there are a suitable table and a good light for operating; and that a carbolic compress is applied to the patient's abdomen. If there is shock it will be well to administer saline infusion either subcutaneously or directly into the veins. An enema of a few ounces of strong black coffee may also be given. Hitherto nearly all the cases in which operations have been performed and lives have been saved have been in hospital practice. Let us hope that equally good results will before long be obtained in private practice. There can be no greater satisfaction to a general practitioner than to feel that he has snatched a patient from the very jaws of death. To this end he must be prepared for the emergency as well as possess the acumen to recognise it.

CASE 1. (From notes taken by Dr. J. L. Lock and Dr. T. W. S. Paterson, house physicians, and Mr. Gilks, Mr. Jays, and Mr. Snell, clinical clerks.)—A man, aged 22 years, was admitted to St. Thomas's Hospital on Oct. 17th, 1901. He first felt ill on the 13th and stayed in bed on the 14th, but went to work on the two following days. On the 16th his head ached so severely that he had to leave work by midday. He vomited on the evening of the 15th or 16th. He was described on admission as being a well-nourished young man. There were several rose-coloured spots, which faded on pressure, scattered over the lower thoracic region and the abdomen. The spleen was just palpable. The abdomen moved well and was nowhere tender. The tongue was slightly furred. The pulse-rate was 78 and the temperature was 102·6° F. The urine was normal and there were no signs of disease in the heart or the lungs. On the 21st he complained of headache and of pain in the abdomen. The Widal reaction test was negative. On the 23rd there was tenderness on pressure over the right iliac fossa. On the 29th it was noted: "Patient was sick last night, but has complained of nausea several times before. No abdominal pain now. Bowels usually opened naturally; semi-solid yellow stools. No complications. Never any delirium and sleep has been good and regular. Spots still present but spleen no longer palpable." On the 30th the Widal reaction test was positive. On Nov. 2nd the patient had been sick during the night, but his tongue was cleaner and he was feeling better. The fever lasted about 30 days and then from the 13th to the 21st the temperature was normal. On the 23rd the patient ate some hard biscuits and chocolate which he had obtained surreptitiously. The same night his temperature rose to 102° and this rise proved to be the beginning of a relapse. On the 30th spots reappeared on the abdomen. The temperature reached 104° on Dec. 1st and 2nd. The bowels continued constipated, as they had been throughout the illness, only acting every second or third day, usually after an enema. On the evening of the 3rd, at 10.20 P.M., the patient was awakened with a sharp pain in the right iliac fossa, so severe that it made him writhe. Soon, however, after passing a light-coloured motion he felt relieved and went off to sleep again. At 12.30 A.M. he again complained of pain. The abdomen was then distended and did not move at all in the lower part on respiration, but was resonant all over except in the flanks where shifting dulness could be made out. The liver dulness was completely obliterated. Tenderness in the right iliac region was extreme. The pulse was 95, full and regular, and the respiration rate was 26. As no urine had been passed for several hours 12 ounces of urine were drawn off by catheter, much to the relief of the patient. At 1.30 A.M. the abdomen was moving with respiration. The pulse was 95, full and regular; the respirations were 25; and the temperature was 102·4°. At 3.30 A.M. it was noted: "Patient has been to sleep. Abdomen moving with respiration. Liver dulness still absent. Tenderness in the right iliac fossa on deep palpation. Signs of free fluid in abdomen still present although less marked. Pulse 95; respirations 25; temperature 102·4°." At 5.30 A.M.: "Patient has had more sleep but has felt sick and has retched once. Abdomen tender and more distended. Movement with respiration less. Liver dulness absent. Signs of fluid in abdomen still obtained. Pulse 95, regular and full; respirations 26; temperature 102·4°." At 8.30 A.M.: "Patient has vomited some dark greenish-yellow fluid containing a clot like curdled milk. Abdomen tender. Movements absent in lower part. Fluid thrill detected for the first time; other signs as before. Pulse 95, regular and full; respirations 28; temperature 97°." Dr. Mackenzie was informed of the critical condition of the patient and at his request Mr. Battle saw the patient, on whom he decided to operate. Operation was performed at 10.30 A.M., 12 hours after the onset of symptoms of perforation. The anæsthetic used was chloroform. An incision was made below the umbilicus in the median line and the peritoneum was opened. Immediately under the incision there was a collection of thin yellowish fluid and the intestines showed some exudation of lymph on the surface. Coming from the upper angle of the wound was a thin tongue of omentum adherent at its tip to a coil of small gut which appeared paler and more contracted than the coils around. On pulling on this piece of omentum the intestine rotated and showed a perforation from which fluid exuded. The perforation was sharply cut, somewhat circular, and about one-eighth of an inch across. A silk suture was placed across this opening to draw the edges together and it held well. The space affected was invaginated with Lembert's sutures (No. 00 silk). The abdomen was then washed out with sterilised saline solution and the wound was closed in layers, a tube being left in the lower part. On the 5th, the morning after the operation, it was noted: "The patient lies on his back, does not seem distressed, and takes an intelligent interest in things around. He has slept at intervals during the night. He has been given teaspoonfuls of brandy-and-milk and peptonised milk but has been unable to keep them down. His eyes are somewhat sunken. The alæ nasi dilate slightly on inspiration. Voice hoarse. Temperature subnormal; pulse, 84; respirations, 30. Wound dressed at 11 A.M. Discharge into dressings small in amount and free from smell. Abdomen not distended and moving well on respiration. Liver dulness normal." On the 6th it was noted: "Slept well yesterday afternoon and has had no pain since. No vomiting since 7 P.M. last night. About six ounces of milk and soda-water taken in last 24 hours. Eyes less sunken. No abdominal distension or tenderness. Pulse 74, good tension. Temperature still subnormal." On the 7th it was again noted: "Bowels have acted naturally three times, the first movements since the operation." The bowels were loose from the 11th to the 16th. The stitches of the abdominal wound were taken out on the 12th. Some suppuration occurred in the deeper part of the wound and a small abscess containing about three drachms of foul-smelling pus was opened on the 16th. Otherwise the progress was uneventful. The pyrexia which was interrupted for

[15] Philadelphia Medical Journal, Jan. 19th, 1901.

CHART 1 (CASE 1).

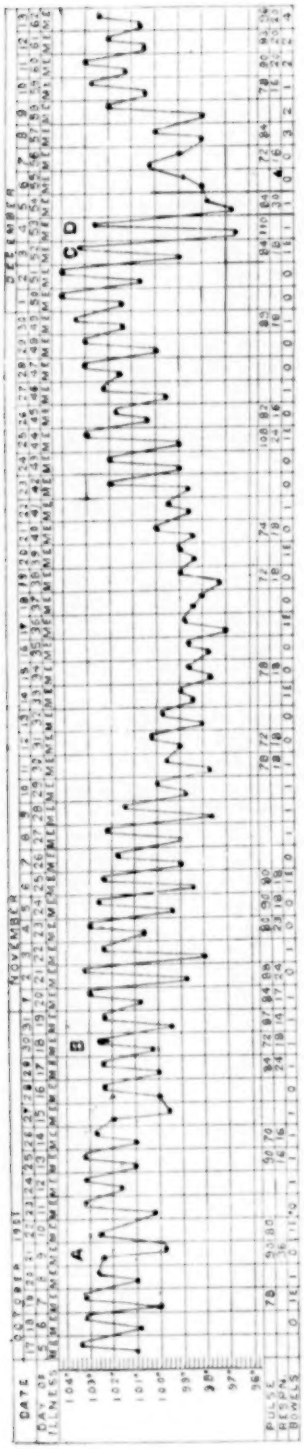
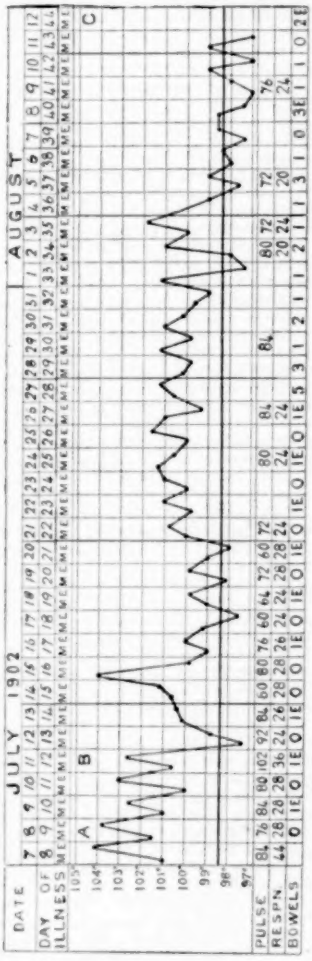


CHART 2 (CASE 2).



Description of Chart 1 (Case 1).

A. On this date the Widal reaction was tested and was found to be negative. B. On Oct. 30th the Widal reaction was found to be positive. C. Symptoms of perforation commenced on Dec. 3rd at 10.20 P.M. D. Mr. Battle operated on Dec. 4th at 10.30 A.M. E. On Jan. 22nd the Widal reaction was found to be positive. F. On Feb. 22nd an abscess was incised on the right side of the old scar. G. The patient was discharged on April 9th, 1902.

Description of Chart 2 (Case 2).

A. On this date the Widal reaction was tested and was found to be negative. B. Symptoms of perforation occurred on the morning of July 11th and Mr. Battle operated the same day at 7.15 P.M. C. After this date the temperature remained normal and the patient was discharged recovered on Sept. 10th, 1902.

a time by the perforation and operation resumed its ordinary course on Dec. 9th and ended on Jan. 1st, 1902. The temperature was subnormal from Jan. 3rd to 14th. The patient was allowed light solid food from the 5th. On the 14th he supplemented his diet with oranges which he had contrived to obtain. On the same day his temperature rose to 101° and pyrexia continued until the 25th. He then appeared to be doing very well. He was allowed solid food again on Feb. 1st and got up for the first time on the 12th. On the 18th he managed to procure and to eat an apple and a banana in spite of all his previous warnings. The same night the temperature rose to 100° F. and next day it was 102°. It looked as if a third relapse was beginning. On the 21st the abdomen was swollen, especially on the right side, where it was also painful and tender. Some peristaltic movement was visible. Next day the temperature was 102° and the abdomen was still tense and tender. There were paroxysms of pain which, starting from a point to the right of the umbilicus, travelled to the left flank and thence across the abdomen to the right flank. At 11 A.M. after an enema he had a copious motion and was relieved. At 7.30 P.M. Dr. Mackenzie saw the patient and thought there was probably some local suppuration. The abdomen was still very tense, especially on the right side, where it was also tender. It was motionless during quiet breathing but moved fairly well on deep inspiration. Mr. Battle opened the abdomen to the right of the old scar. The muscle seemed œdematous and on dividing it thin pus exuded which, in Mr. Battle's opinion, proceeded from a localised peritoneal abscess. A culture of the pus was taken and proved to be sterile. After this abscess was opened there was no more pyrexia. The patient vomited once on March 9th and five times on the 10th. On the evenings of the 10th and the 15th he again had paroxysmal attacks of severe abdominal pain, during which distinct peristalsis was visible, while gas could be felt and heard passing along the intestine. The pain was referred to the epigastrium and travelled from left to right. The region of the epigastrium was very tender and there was distension in the right iliac region. He had another attack of acute pain in the abdomen on the 31st. The abdomen was distended and vomiting occurred three times in three hours. This, however, fortunately proved to be the last attack of pain he had. He was discharged on April 9th and has kept well since.

CASE 2. (From notes taken by Dr. K. E. Crompton, house physician, and Mr. Pinches, clinical clerk.)—A man, aged 28 years, was admitted to St. Thomas's Hospital on July 7th, 1902. On June 30th, after a heavy day's work, he had been suddenly taken ill with pains shooting across the forehead and of a stabbing character in the back. He worked the next day although the pains grew worse. On July 2nd he again went to work, but feeling so ill he soon returned home and went to bed. On the morning of the 3rd he woke up feeling very chilly, shivered, and then sweated profusely and his pains continued during the day. On the 4th he had several rigors and vomited after food. On the 5th, however, he was able to go out and to visit his medical attendant. On the 6th he felt pain in the epigastric region and his head and back were worse. On July 7th, as he was on his way to the hospital, he turned giddy and fell. He was a well-developed man with flushed perspiring face and slightly sunken eyes. The abdomen was well covered and moved well. There was slight distension in the left iliac fossa which, as well as the epigastrium, was tender to palpation. There were no typical typhoid fever spots visible. The lower end of the spleen was just palpable below the left costal margin. The tongue was very dry, white at the edges, and covered with a thick brown fur down the centre. There were no abnormal physical signs in the heart or lungs. His pulse was 80, full and bounding, and his respirations were 36. The urine was normal. He had had no action of the bowels since the commencement of his illness. The Widal test was negative on the 8th. The variations of the temperature, from 100° to 103° F., during the first four days are to be seen on the chart. On the morning of the 11th it was noted: "Pain in the epigastric region on coughing, where there is some tenderness on pressure. Slight soreness of throat. Headache much relieved. Tongue cleaner. Bowels well opened after enema. Temperature 100·6°; pulse 68, good tension; respirations 26." At 1.30 P.M. there was a sudden onset of abdominal pain, referred principally to the neighbourhood of the umbilicus, but also to the right iliac region. Vomiting occurred soon after the onset of pain. He was seen at 2.15 P.M. and then the abdomen moved poorly on respiration, the right side especially being rigid, resistant, and tender to palpation. The pulse was 84 and the temperature was 102·6°. At 4.30 P.M. he looked much worse. His expression was anxious and his eyes were sunken. He lay with the knees drawn up and complained much of the abdominal pain which the application of hot fomentations had failed to relieve. The pain, which was most severe round the umbilicus, was aggravated by coughing or taking a deep breath. The abdomen did not move with respiration and was held rigid. The resistance and tenderness were very marked, especially in the right iliac region. There was no dulness in the flanks and the liver dulness was not encroached on. The pulse was now 104 and smaller than before, but the temperature was unaltered. The symptoms and the result of examination clearly pointed, it was thought, to perforation. Mr. Battle operated at 7.15 P.M., five and three-quarter hours after the onset of the acute pain. The anæsthetic was gas and ether. A four-inch vertical incision was made in the middle line from about one inch below the umbilicus. The peritoneum was divided and when the coils of intestine were exposed some thin, light-yellow pus-like fluid containing some small yellowish masses was seen separating them, but there was no appreciable fæcal smell. On tracing the small intestine downwards towards the ileum there was soon found a round clean-edged perforation about a quarter of an inch in diameter with a slough adherent to it on its inner side. The perforation was closed by Lembert's sutures. After the abdominal cavity had been washed out the peritoneum was closed with silk stitches and the skin incision with a continuous stitch. The patient's condition at the end of the operation was good. He passed a quiet night but did not sleep much. Hypodermic injections of one-twentieth of a grain of hydrochlorate of strychnine were given at 8.15 P.M. and at 4 A.M., and a hypodermic injection of a quarter of a grain of tartrate of morphia was given at 11 P.M. Vomiting occurred twice in the night. Spoonfuls of hot water were given when asked for. On the next morning (the 12th) he looked decidedly better and except for some abdominal pain on coughing he was quite comfortable. The tongue was moister and cleaner. The pulse was 92 and the temperature was 97°. On the 14th he passed a fairly good night. His bowels were opened by enema on the previous day. There was no pain except on coughing and then only at the site of incision. The pulse was 88, full, and the temperature was 100·6°. His diet was one of milk and beef-tea. The Widal reaction test, which was negative before the perforation, was now found to be positive. The bowels were constipated, only acting after an enema, until the 27th, when five loose stools, three of which contained blood, were passed in 24 hours. On the 28th the bowels acted three times, a little blood being present each time. On August 2nd there were two loose stools, in one of which there were a few streaks of blood. After August 4th the temperature did not rise above 99° and convalescence set in. The only trouble was the abdominal wound which gaped at first and suppurated, necessitating dressing four times a day with chlorinated soda for several weeks. It did not heal up completely until the beginning of September. The patient was discharged well on Sept. 10th, but was, however, readmitted on Sept. 18th on account of pain in the right knee. There was a tender spot on the extensor surface of the right thigh three inches above the patella. The right inguinal glands were slightly enlarged but were not tender. With rest in bed, hot fomentations, &c., the pain subsided and the patient was again discharged on Oct. 17th. He resumed his work as a corn porter and continued well and strong until January, 1903. He was then admitted under Mr. Battle's care complaining of severe pain in the abdomen which had followed a slip when carrying a sack of corn. He had vomited soon afterwards and referred his pain to the region under the old scar. There was, however, nothing abnormal to be seen and his symptoms soon subsided with rest in bed and the application of hot fomentations.

DURSLEY (GLOUCESTERSHIRE) DRAINAGE SCHEME.—On Sept. 18th, at the meeting of the joint committee appointed to deal with the Dursley and Cam drainage scheme, a tender for £13,362 was accepted for carrying out the work. A commencement will be made in a few days and Mr. Eyre, who contributed £1000 towards the cost, will perform the opening ceremony.

An Address
ON
SOME PROBLEMS ARISING FROM THE VARIATIONS IN THE DEVELOPMENT OF THE SKULL AND THE BRAIN.

Delivered before the Anthropological Section of the British Association for the Advancement of Science at Southport in September, 1903,

BY JOHNSON SYMINGTON, M.D. EDIN., F.R.S.,

PRESIDENT OF THE SECTION; PROFESSOR OF ANATOMY AT, AND REGISTRAR OF, QUEEN'S COLLEGE, BELFAST.

LADIES AND GENTLEMEN,—It is now nearly 20 years since anthropology attained to the dignity of being awarded a special and independent section in this Association and I believe it is generally admitted that during this period the valuable nature of many of the contributions, the vigour of the discussions, and the large attendance of members have amply justified the establishment and continued existence of this section. While the multifarious and diverse nature of the subjects which are grouped under the term "anthropology" gives a variety and a breadth to our proceedings which are very refreshing in this age of minute specialism, I feel that it adds very considerably to the difficulty of selecting a subject for a presidential address which will prove of general interest. A survey of the recent advances in our knowledge of the many important questions which come within the scope of this section would cover too wide a field for the time at my disposal, while a critical examination of the various problems that still await solution might expose me to the temptation of pronouncing opinions on subjects regarding which I could not speak with any real knowledge or experience. To avoid such risks I have decided to limit my remarks to a subject which comes within the range of my own special studies and to invite your attention to a consideration of some problems arising from the variations in the development of the skull and the brain.

Since the institution of this section the development, growth, and racial peculiarities of both the skull and the brain, and the relation of these two organs to each other have attracted an ever-increasing amount of attention. The introduction of new and improved methods for the study of the structure of the brain and the activity of an able band of experimentalists have revolutionised our knowledge of the anatomy and physiology of the higher nerve centres. The value of the results thus obtained is greatly enhanced by the consciousness that they bear the promise of still greater advances in the near future. If the results obtained by the craniologist have been less marked, this arises mainly from the nature of the subject, and is certainly not due to any lack of energy on their part. Our craniological collections are continually increasing and the various prehistoric skull-caps from the Neanderthal to the Trinil still form the basis of interesting and valuable memoirs. While the additions to our general knowledge of cerebral anatomy and physiology have been so striking those aspects of these subjects which are of special anthropological interest have made comparatively slight progress and cannot compare in extent and importance with the advances based upon a study of fossil and recent crania. These facts admit of a ready explanation. Brains of anthropological interest are usually difficult to procure and to keep, and require the use of special and complicated methods for their satisfactory examination, while skulls of the leading races of mankind are readily collected, preserved, and studied. Hence it follows that the crania in our anthropological collections are as numerous, well preserved, and varied as the brains are few in number and defective, both in their state of preservation and representative character. It may reasonably be anticipated that improved methods of preservation and the growing recognition on the part of anthropologists, museum curators, and collectors of the importance of a study of the brain itself will to some extent at least remedy these defects; but so far as prehistoric man is concerned, we can never hope to have any direct evidence of the condition of his higher nerve centres, and must depend for an estimate of his cerebral development upon those more or less perfect skulls which fortunately have resisted for so many ages the corroding hand of time.

I presume we will all admit that the main value of a good collection of human skulls depends upon the light which they can be made to throw upon the relative development of the brains of different races. Such collections possess few, if any, brains taken from these or corresponding skulls, and we are thus dependent upon the study of the skulls alone for an estimate of brain development.

Vigorous attacks have not infrequently been made upon the craniometric systems at present in general use, and the elaborate tables, compiled with so much trouble, giving the circumference, diameters, and corresponding indices of various parts of the skull are held to afford but little information as to the real nature of skull variations, however useful they may be for purposes of classification. While by no means prepared to express entire agreement with these critics, I must admit that craniologists as a whole have concentrated their attention mainly on the external contour of the skull and have paid comparatively little attention to the form of the cranial cavity. The outer surface of the cranium presents features which are due to other factors than brain development, and an examination of the cranial cavity not only gives us important information as to brain form but by affording a comparison between the external and internal surfaces of the cranial wall it gives a valuable clue to the real significance of the external configuration. Beyond determining its capacity we can do but little towards an exact investigation of the cranial cavity without making a section of the skull. 40 years ago Professor Huxley, in his work "On the Evidence of Man's Place in Nature," showed the importance of a comparison of the basal with the vaulted portion of the skull and maintained that until it should become "an opprobrium to an ethnological collection to possess a single skull which is not bisected longitudinally" there would be "no safe basis for that ethnological craniology which aspires to give the anatomical characters of the crania of the different races of mankind." Professor J. Cleland and Sir William Turner have also insisted upon this method of examination, and only two years ago Professor D. J. Cunningham, in his presidential address to this section quoted with approval the forcible language of Huxley. The curators of craniological collections appear, however, to possess an invincible objection to any such treatment of the specimens under their care. Even in the Hunterian Museum in London, where Huxley himself worked at this subject, among several thousands of skulls scarcely any have been bisected longitudinally or had the cranial cavity exposed by a section in any other direction. The method advocated so strongly by Huxley is not only essential to a thorough study of the relations of the basi-cranial axis to the vault of the cranium and to the facial portion of the skull, but also permits of casts being taken of the cranial cavity, a procedure which, I would venture to suggest, has been too much neglected by craniologists.

Every student of anatomy is familiar with the finger-like depressions on the inner surface of the cranial wall which are described as the impress of the cerebral convolutions, but their exact distribution and the degree to which they are developed according to age, sex, race, &c., still remain to be determined definitely. Indeed, there appears to be a considerable difference of opinion as to the degree of approximation of the outer surface of the brain to the inner surface of the cranial wall. Thus the brain is frequently described as lying upon a water bed or as swimming in the cerebro-spinal fluid, while Hyrtl speaks of this fluid as a "ligamentum suspensorium" for the brain. Such descriptions are misleading when applied to the relation of the cerebral convolutions to the skull. There are, it is true, certain parts of the brain which are surrounded and separated from the skull by a considerable amount of fluid. These, however, are mainly the lower portions, such as the medulla oblongata and pons Varolii, which may be regarded as prolongations of the spinal cord into the cranial cavity. As they contain the centres controlling the action of the circulatory and respiratory organs they are the most vital parts of the central nervous system and hence need special protection. They are not, however, concerned with the regulation of complicated voluntary movements, the reception and storage of sensory impressions from lower centres, and the activity of

the various mental processes. These functions we must associate with the higher parts of the brain and especially with the convolutions of the cerebral hemispheres.

If a cast be taken of the cranial cavity and compared with the brain which had previously been carefully hardened *in situ* before removal, it will be found that the cast not only corresponds in its general form to that of the brain, but shows a considerable number of the cerebral fissures and convolutions. This moulding of the inner surface of the skull to the adjacent portions of the cerebral hemispheres is usually much more marked at the base and sides than over the vault. Since the specific gravity of the brain tissue is higher than that of the cerebro-spinal fluid, the cerebrum tends to sink towards the base and the fluid to accumulate over the vault; hence, probably, these differences admit of a simple mechanical explanation. Except under abnormal conditions, the amount of cerebro-spinal fluid between the skull and the cerebral convolutions is so small that from a cast of the cranial cavity we can obtain not only a good picture of the general shape and size of the higher parts of the brain but also various details as to the convolutionary pattern. This method has been applied with marked success to the determination of the characters of the brain in various fossil lemurs by Dr. Forsyth-Major and Professor R. Burckhardt, and Professor Gustav Schwalbe has made a large series of such casts from his craniological collection in Strassburg. The interesting observations by Schwalbe[1] on the arrangement of the "impressiones digitatæ" and "juga cerebralia," and their relation to the cerebral convolutions in man, the apes, and various other mammals, have directed special attention to a very interesting field of inquiry. As is well known the marked prominence at the base of the human skull, separating the anterior from the middle fossa, fits into the deep cleft between the frontal and temporal lobes of the brain, and Schwalbe has shown that this ridge is continued—of course, in a much less marked form—along the inner surface of the lateral wall of the skull, so that a cast of the cranial cavity presents a shallow but easily recognised groove corresponding to the portion of the Sylvian fissure of the brain separating the frontal and parietal lobes from the temporal lobe. Further, there is a distinct depression for the lodgment of the inferior frontal convolution and a cast of the middle cranial fossa shows the three external temporal convolutions.

We must now turn to the consideration of the relations of the outer surface of the cranium to its inner surface and to the brain. This question has engaged the attention of experts as well as the "man in the street" since the time of Gall and Spurzheim and one might naturally suppose that the last word had been said on the subject. This, however, is far from being the case. All anatomists are agreed that the essential function of the cranium is to form a box for the support and protection of the brain, and it is generally conceded that during the processes of development and growth the form of the cranium is modified in response to the stimulus transmitted to it by the brain. In fact it is brain growth that determines the form of the cranium and not the skull that moulds the brain into shape. This belief, however, need not be accepted without some reservations. Even the brain may be conceived as being influenced by its immediate environment. There are probably periods of development when the form of the brain is modified by the resistance offered by its coverings and there are certainly stages when the brain does not fully occupy the cranial cavity.

At an early period in the phylogeny of the vertebrate skull the structure of the greater part of the cranial wall changes from membranous tissue into cartilage, the portion persisting as membrane being situated near the median dorsal line. In the higher vertebrates the rapid and early expansion of the dorsal part of the fore-brain is so marked that the cartilaginous growth fails to keep pace with it, and more and more of the dorsal wall of the cranium remains membranous, and subsequently ossifies to form membrane bones. Cartilage, though constituting a firmer support to the brain than membrane, does not possess the same capacity of rapid growth and expansion. The head of a young child is relatively large, and its skull is distinguished from that of an adult by the small size of the cartilaginous base of the cranium as compared with the membranous vault. The appearance of top-heaviness in the young skull is gradually obliterated as age advances by the cartilage continuing slowly to grow after the vault has practically ceased to enlarge. These changes in the shape of the cranium are associated with corresponding alterations in that of the brain and it appears to me that we have here an illustration of how the conditions of skull growth may modify the general form of the brain.

Whatever may be the precise influences that determine skull and brain growth, there can be no doubt but that within certain limits the external form of the cranium serves as a reliable guide to the shape of the brain. Statements such as those by Dr. J. Deniker[2] "that the inequalities of the external table of the cranial walls have no relation whatever with the irregularities of the inner table and still less have anything in common with the configuration of the various parts of the brain," are of too general and sweeping a character. Indeed, various observers have drawn attention to the fact that in certain regions the outer surface of the skull possesses elevations and depressions which closely correspond to definite fissures and convolutions of the brain. Many years ago Sir William Turner, who was a pioneer in cranio-cerebral topography, found that the prominence on the outer surface of the parietal bone, known to anatomists as the parietal eminence, was situated directly superficial to a convolution of the parietal lobe of the brain, which he consequently very appropriately named "the convolution of the parietal eminence." Quite recently Professor Schwalbe has shown that the position of the third or inferior frontal convolution is indicated by a prominence on the surface of the cranium in the anterior part of the temple. This area of the brain is of special interest to all students of cerebral anatomy and physiology, since it was the discovery by the illustrious French anthropologist and physician, M. Broca, that the left inferior frontal convolution was the centre for speech, that laid the scientific foundation of our present knowledge of localisation of function in the cerebral cortex. This convolution is well known to be much more highly developed in man than in the anthropoid apes and the presence of a human cranial speech-bump is usually easily demonstrated. The faculty of speech, however, is such a complicated cerebral function that I would warn the "new" phrenologist to be cautious in estimating the loquacity of his friends by the degree of prominence of this part of the skull, more particularly as there are other and more reliable methods of observation by which he can estimate this capacity.

In addition to the prominences on the outer surface of the cranium, corresponding to the convolutions of the parietal eminence and the left inferior frontal convolution, the majority of skulls possess a shallow groove marking the position of the Sylvian point and the course of the horizontal limb of the Sylvian fissure. Below these two other shallow oblique grooves indicate the line of the cerebral fissures which divide the outer surface of the temporal lobe into its three convolutions, termed superior, middle, and inferior. Most of these cranial surface markings are partially obscured in the living body by the temporal muscle, but they are of interest as showing that in certain places there is a close correspondence in form between the external surface of the brain and that of the skull. There are, however, distinct limitations in the degree to which the various cerebral fissures and convolutions impress the inner surface of the cranial wall or are represented by inequalities on its outer aspect. Thus over the vault of the cranium the position of the fissure of Rolando and the shape of the cerebral convolutions in the so-called motor area, which lie in relation to this fissure, cannot usually be detected from a cast of the cranial cavity and are not indicated by depressions or elevations on the surface of the skull, so that surgeons in planning the seats of operations necessary to expose the various motor centres have to rely mainly upon certain linear and angular measurements made from points frequently remote from these centres.

The cranium is not merely a box developed for the support and protection of the brain, and more or less accurately moulded in conformity with the growth of this organ. Its antero-lateral portions afford attachments to the muscles of mastication and support the jaws and teeth, while its posterior part is liable to vary according to the degree of development of the muscles of the nape of the neck. Next to the brain the most important factor in determining cranial form is the condition of the organs of mastication—the muscles, the jaws, and the teeth. There is strong evidence in favour of the

[1] Ueber die Beziehungen zwischen Innenform und Aussenform des Schädels, Deutsches Archiv für Klinische Medicin, 1902.

[2] The Races of Man, p. 53.

view that the evolution of man from microcephaly to macrocephaly has been associated with the passage from a macrodontic to a microdontic condition. The modifications in the form of the cranium due to the influence of the organs of mastication have been exerted almost entirely upon its external table; hence external measurements of the cranium, as guides to the shape of the cranial cavity and indications of brain development, while fairly reliable in the higher races, become less and less so as we examine the skulls of the lower races, of prehistoric man, and of the anthropoid apes.

One of the most important measurements of the cranium is that which determines the relation between its length and breadth and thus divides skulls into long or short, together with an intermediate group neither distinctly dolichocephalic nor brachycephalic. These measurements are expressed by an index in which the length is taken as 100. If the proportion of breadth to length is 80 or upwards, the skull is brachycephalic; if between 75 and 80, mesaticephalic; and below 75, dolichocephalic. Such a measurement is not so simple a matter as it might appear at first sight and craniologists may themselves be classified into groups according as they have selected the nasion, or depression at the root of the nose, the glabella, or prominence above this depression, and the ophryon, a spot just above this prominence, as the anterior point from which to measure the length. In a young child this measurement would practically be the same whichever of these three points was chosen, and each point would be about the same distance from the brain. With the appearance of the teeth of the second dentition and the enlargement of the jaws the frontal bone in the region of the eyebrows and just above the root of the nose thickens and its outer table bulges forwards so that it is now no longer parallel with the inner table. Between these tables air cavities gradually extend from the nose, forming the frontal sinuses. Although the existence and significance of these spaces and their influence on the prominence of the eyebrows were the subject of a fierce controversy more than half a century ago between the phrenologists and their opponents it is only recently that their variations have been carefully investigated.

The frontal sinuses are usually supposed to vary according to the degree of prominence of the glabella and the supra-orbital arches. This, however, is not the case. Thus Schwalbe[3] has figured a skull in which the sinuses do not project as high as the top of the glabella and supra-orbital prominences and another in which they extend considerably above these projections. Further, Dr. A. Logan Turner,[4] who has made an extensive investigation into these cavities, has shown that in the aboriginal Australian, in which this region of the skull is unusually prominent, the frontal sinuses are frequently either absent or rudimentary. The ophryon has been selected by some craniologists as the anterior point from which to measure the length of the skull under the impression that the frontal sinuses do not usually reach above the glabella. Dr. Logan Turner, however, found that out of 174 skulls in which the frontal sinuses were present in 130 the sinuses extended above the ophryon. In 71 skulls the depth of the sinus at the level of the ophryon varied from two millimetres to 16 millimetres, the average being 5·2 millimetres, while in the same series of skulls the depth at the glabella varied from three millimetres to 18 millimetres, with an average depth of 8·5 millimetres. It thus appears that the selection of the ophryon in preference to the glabella, as giving a more accurate clue to the length of the brain, is based upon erroneous assumptions, and that neither point can be relied upon in the determination of the anterior limit of the cranial cavity. The difficulties of estimating the extent of the cranial cavity by external measurements and the fallacies that may result from a reliance upon this method are especially marked in the case of the study of the prehistoric human calvaria, such as the Neanderthal and the Trinil and the skulls of the anthropoid apes.

Statistics are popularly supposed to be capable of proving almost anything, and certainly if you allow craniologists to select their own points from which to measure the length and breadth of the cranium they will furnish you with tables of measurements showing that one and the same skull is dolichocephalic, mesaticephalic, and brachycephalic. Let us take as an illustration an extreme case, such as the skull of an adult male gorilla. Its glabella and supra-orbital arches will be found to project forwards, its zygomatic arches outwards, and its transverse occipital crests backwards, far beyond the anterior, lateral, and posterior limits of the cranial cavity. These outgrowths are obviously correlated with the enormous development of the muscles of mastication and those of the back of the neck. In a specimen in my possession the greatest length of the cranium—i.e., from glabella to external occipital protuberance—is 195 millimetres and the greatest breadth, taken between the outer surfaces of the zygomatic processes of the temporal bone, is 172 millimetres, giving the marked brachycephalic index of 88·21. The zygomatic processes, however, may reasonably be objected to as indicating the true breadth, and the side wall of the cranium just above the line where the root of this process springs from the squamous portion of the temporal bone will certainly be much nearer the cranial cavity. Measured in this situation the breadth of the cranium is 118 millimetres, which gives a length-breadth index 60·51 and thus represents the skull as decidedly dolichocephalic. The transverse occipital crests and the point where these meet in the middle line to form the external occipital protuberance are much more prominent in the male than in the female gorilla, and the estimate of the length of the cranium in this male gorilla may be reduced to 160 millimetres by selecting the base of the protuberance in place of its posterior extremity as the posterior end measurement. This raises the index to 73·75 and places the skull near the mesaticephalic group. At the anterior part of the skull the prominent glabella is separated from the inner table of the skull by large air sinuses, so that on a median section of the skull the distance from the glabella to the nearest part of the cranial cavity is 36 millimetres. We have here, therefore, another outgrowth of the cranial wall which in an examination of the external surface of the skull obscures the extent of the cranial cavity. Accordingly, the glabella cannot be selected as the anterior point from which to measure the length of the cranium and must, like the zygomatic arches and occipital protuberance, be excluded from our calculations if we desire to determine a true length-breadth index. The difficulty, however, is to select a definite point on the surface of the cranium to represent its anterior end which will be free from the objections justly urged against the glabella. Schwalbe suggests the hinder end of the supraglabellar fossa, which he states often corresponds to the beginning of a more or less distinctly marked frontal crest. I have found this point either difficult to determine or too far back. Thus in my male gorilla the posterior end of this fossa formed by the meeting of the two temporal ridges was 56 millimetres behind the glabella and only 24 millimetres from the bregma, while in the female gorilla the temporal ridges do not meet, but there is a low median frontal ridge which may be considered as bounding posteriorly the supraglabellar fossa. This point is 22 millimetres from the glabella and between 50 and 60 millimetres in front of the bregma.

I would suggest a spot in the median line of the supraglabellar fossa which is crossed by a transverse line uniting the posterior borders of the external angular processes of the frontal bone. I admit this plan is not free from objections, but it possesses the advantages of being available for both male and female skulls. In my male skull the selection of this point diminishes the length of the cranium by 25 millimetres, thus reducing it to 137 millimetres. The breadth being calculated at 114 millimetres, the index is 83·21, and hence distinctly brachycephalic. The length of the cranial cavity is 118 millimetres and the breadth 96 millimetres, and the length-breadth index is thus the brachycephalic one of 81·36.

I have given these somewhat detailed references to the measurements of this gorilla's skull because they show in a very clear and obvious manner that from an external examination of the skull one might easily be misled as to the size and form of the cranial cavity, and that, in order to determine from external measurements the proportions of the cranial cavity, skull outgrowths due to other factors than brain growth must be rigorously excluded. Further, these details will serve to emphasise the interesting fact that the gorilla's skull is decidedly brachycephalic. This character is by no means restricted to the gorilla, for it has been clearly proved by Virchow, Schwalbe, and others that all the anthropoid apes are markedly round-headed. Ever since the introduction by the illustrious Swedish anthropologist Anders Retzius of a classification of skulls according to the proportions between their length and breadth great attention has been paid to this peculiarity in different races of mankind. It has been generally held that brachycephaly indicates a

[3] Studien über Pithecanthropus erectus, Zeitschrift für Morphologie und Anthropologie, Band i., 1899.

[4] The Accessory Sinuses of the Nose, 1901.

higher type of skull than dolichocephaly and that the increase in the size of the brain in the higher races has tended to produce a brachycephalic skull. When the cranial walls are subject to excessive internal pressure, as in hydrocephalus, the skull tends to become distinctly brachycephalic, as a given extent of wall gives a greater internal cavity in a spherical than an oval form. In estimating the value of this theory as to the evolutionary line upon which the skull has travelled it is obvious that the brachycephalic character of the skulls of all the anthropoid apes is a fact which requires consideration.

Although an adult male gorilla such as I have selected presents in an extreme degree outgrowths from the cranial wall masking the true form of the cranial cavity, the same condition, though to a less marked extent, is met with in the human subject. Further, it is interesting to note that the length of the skull is more liable to be increased by such growths than the breadth, since they occur especially over the lower part of the forehead and to a less degree at the back of the skull, while the side walls of the cranium in the region of its greatest breadth generally remain thin.

Few if any fossils have attracted an equal amount of attention or given rise to such keen controversies as the Neanderthal and the Trinil skull-caps. According to some authorities both these skull-caps are undoubtedly human, while others hold that the Neanderthal belongs to an extinct species of the genus Homo, and the Trinil is the remains of an extinct genus—*Pithecanthropus erectus* of Dubois—intermediate between man and the anthropoids. One of the most obvious and easily recognised peculiarities of the skull-caps is the very marked prominence of the supra-orbital arches. The glabella-occipital length of the Neanderthal is 204 millimetres and the greatest transverse diameter, which is over the parietal region, is 152 millimetres—an index of 74·51—while the much smaller Trinil calvaria, with a length of 181 millimetres and a breadth of 130 millimetres, has an index of 71·8. Both of these skulls are therefore slightly dolichocephalic.

Schwalbe has corrected these figures by making reductions in their lengths on account of the frontal "outworks," so that he estimates the true length-breadth index of the Neanderthal as 80 and that of the Trinil as 75·5. These indices, thus raised about 5 per cent., are considered to represent approximately the length-breadth index of the cranial cavity. A comparison of the external and internal measurements of many recent skulls with prominent glabellæ would, I suspect, show a greater difference than that calculated by Schwalbe for the Neanderthal and Trinil specimens. In a male skull, probably an aboriginal Australian, with a cranial capacity of 1227 cubic centimetres I found that the glabella-occipital length was 189 millimetres, and the transverse diameter at the parieto-squamous suture 127 millimetres, which gives an index of 67·20 and makes the skull decidedly dolichocephalic. The length of the cranial cavity, however, was 157 millimetres and the breadth 121 millimetres (an index of 77·07 and a difference of nearly 10 per cent.), so that while from external measurements the skull is distinctly dolichocephalic, the proportions of its cavity are such that it is mesaticephalic. It is probable that many skulls owe their dolichocephalic reputation simply to the prominence of the glabella and supra-orbital ridges. An excessive development of these structures is also liable to give the erroneous impression of a retreating forehead. In the Australian skull just mentioned the thickness of the cranial wall at the glabella was 22 millimetres; from this level upwards it gradually thinned until 45 millimetres above the glabella it was only six millimetres thick. When the bisected skull was placed in the horizontal position the anterior surface of the frontal bone sloped from the glabella upwards and distinctly backwards, while the posterior or cerebral surface was inclined upwards and forwards. In fact, the cranial cavity in this region was separated from the lower part of the forehead by a wedge-shaped area having its apex upwards and its base below at the glabella. The cranial wall opposite the glabella is not appreciably thicker in the Neanderthal calvaria than in the Australian skull to which I have already referred, and the form of the cranial cavity is not more masked by this prominence in the Neanderthal than in many of the existing races.

Although the Neanderthal skull is by no means complete, the base of the cranium and the face bones being absent, still those parts of the cranial wall are preserved that are specially related to the portion of the brain which subserves all the higher mental processes. It includes the frontal, parietal, and upper part of the occipital bones, with parts of the roof of the orbits in front and of the squamous division of the temporal bones at the sides. On its inner or cranial aspect there are markings by which the boundaries between the cerebrum and the cerebellum can be determined. In a profile view of such a specimen an inio-glabellar line can be drawn which will correspond very closely to the lower boundary of the cerebrum and indicate a horizontal plane above which the vaulted portion of the skull must have contained nearly the whole of the cerebrum.

Schwalbe[5] has devised a series of measurements to illustrate what he regards as essential differences between the Neanderthal skull-cap and the corresponding portion of the human skull. From the inio-glabellar line another is drawn at right angles to the highest part of the vault and by comparing the length of these two lines we can determine the length-height index. According to Schwalbe this is 40·4 in the Neanderthal, while the minimum in the human skull is 52. He further shows that the frontal portion of the vault, as represented by a glabella-bregmatic line, forms a smaller angle with the base or inio-glabellar line, and that a vertical line from the posterior end of the frontal bone (bregma) cuts the inio-glabellar further back than in the human subject. Professor King of Galway attached special importance to the shape and proportions of the parietal bones and more particularly to the fact that their mesial borders are shorter than the lower or temporal, whereas the reverse is the case in recent man. This feature is obviously related to the defective expansion of the Neanderthal vault and Professor Schwalbe also attributes considerable significance to this peculiarity.

Another distinctive feature of the Neanderthal skull is the relation of the orbits to the cranial wall. Schwalbe shows that its brain-case takes a much smaller share in the formation of the roof of the orbit than it does in recent man, and Professor King pointed out that a line from the anterior inferior angle of the external orbital process of the frontal bone, drawn at right angles to the inio-glabellar line, passed in the Neanderthal in front of the cranial cavity, whereas in man such a line would have a considerable portion of the frontal part of the brain-case anterior to it.

From the combined results of these and other measurements Schwalbe arrives at the very important and interesting conclusion that the Neanderthal skull possesses a number of important peculiarities which differentiate it from the skulls of existing man and show an approximation towards those of the anthropoid apes. He maintains that in recognising with King[6] and Cope[7] the Neanderthal skull as belonging to a distinct species, Homo Neanderthalensis, he is only following the usual practice of zoologists and palæontologists by whom specific characters are frequently founded upon much less marked differences. He maintains that as the Neanderthal skull stands in many of its characters nearer to the higher anthropoids than to recent man, if the Neanderthal type is to be included under the term Homo sapiens then this species ought to be still more extended so as to embrace the anthropoids.

It is interesting to turn from a perusal of these opinions recently advanced by Schwalbe to consider the grounds on which Huxley and Turner, about 40 years ago, opposed the view, which was then being advocated, that the characters of the Neanderthal skull were so distinct from those of any of the existing races as to justify the recognition of a new species of the genus Homo. Huxley, while admitting that it was "the most pithecoid of human skulls," yet holds that it "is by no means so isolated as it appears to be at first, but forms in reality the extreme term of a series leading gradually from it to the highest and best developed of human crania." He states that "it is closely approached by certain Australian skulls and even more nearly by the skulls of certain ancient people who inhabited Denmark during the stone period." Turner's[8] observations led him to adopt a similar view to that advanced by Huxley. He compared the Neanderthal calvaria with savage and British crania in the Anatomical Museum of the University of Edinburgh and found amongst them specimens closely corresponding to the Neanderthal type.

While yielding to no one in my admiration for the

[5] Ueber die specifischen Merkmale des Neanderthalschädels, Verhandlungen der Anatomischen Gesellschaft in Bonn, 1901.
[6] The Reputed Fossil Man of the Neanderthal, Journal of Science, 1864.
[7] The Genealogy of Man, The American Naturalist, vol. xxvii., 1893.
[8] The Fossil Skull Controversy, Journal of Science, 1864.

thoroughness and ability with which Schwalbe has conducted his elaborate and extensive investigations on this question I must confess that, in my opinion, he has not sufficiently recognised the significance of the large cranial capacity of the Neanderthal skull in determining the zoological position of its owner or made sufficient allowance for the great variations in form which skulls undoubtedly human may present. The length and breadth of the Neanderthal calvaria are distinctly greater than in many living races and compensate for its defect in height, so that it was capable of lodging a brain fully equal in volume to that of many existing savage races and at least double that of any anthropoid ape.

A number of the characters upon which Schwalbe relies in differentiating the Neanderthal skull-cap are due to an appreciable extent to the great development of the glabella and supra-orbital arches. Now these processes are well known to present very striking variations in existing human races. They are usually supposed to be developed as buttresses for the purpose of affording support to the large upper jaw and enable it to resist the pressure of the lower jaw due to the contraction of the powerful muscles of mastication. These processes, however, are usually feebly marked in the microcephalic, prognathous, and macrodont negro skull and may be well developed in the macrocephalic and orthognathous skulls of some of the higher races. Indeed, their variations are too great and their significance too obscure for them to form a basis for the creation of a new species of man. Both Huxley and Turner have shown that the low vault of the Neanderthal calvaria can be closely paralleled by specimens of existing races.

If the characters of the Neanderthal calvaria are so distinctive as to justify the recognition of a new species, a new genus ought to be made for the Trinil skull-cap. In nearly every respect it is distinctly lower in type than the Neanderthal, and yet many of the anatomists who have expressed their opinion on the subject maintain that the Trinil specimen is distinctly human.

Important and interesting as are the facts which may be ascertained from a study of a series of skulls regarding the size and form of the brain, it is evident that there are distinct limits to the knowledge to be obtained from this source. Much additional information as to racial characters would undoubtedly be gained had we collections of brains at all corresponding in number and variety with the skulls in our museums. We know that as a rule the brains of the less civilised races are smaller and the convolutions and fissures simpler than those of the more cultured nations, beyond this but little more has been definitely determined.

As the results of investigations in human and comparative anatomy, physiology, and pathology, we know that definite areas of the cerebral cortex are connected with the action of definite groups of muscles and that the nervous impulses starting from the organs of smell, sight, hearing, and common sensibility reach defined cortical fields. All these, however, do not cover more than a third of the convoluted surface of the brain, and the remaining two-thirds are still to a large extent a *terra incognita* so far as their precise function is concerned. Is there a definite localisation of special mental qualities or moral tendencies and if so where are they situated? These are problems of extreme difficulty, but their interest and importance are difficult to exaggerate. In the solution of this problem anthropologists are bound to take an active and important part. When they have collected information as to the relative development of the various parts of the higher brain in all classes of mankind with the same thoroughness with which they have investigated the racial peculiarities of the skull the question will be within a measurable distance of solution.

TAVISTOCK HOSPITAL AND DISPENSARY.—A new wing to the Tavistock Hospital was formally opened by Mr. W. Spear, M.P., on Sept. 16th, in the presence of a large gathering. The cost of the building has been defrayed out of the invested funds of the institution, but the maintenance will receive the benefit of a bequest of £11,500 under the will of the late Mr. J. H. Gill. The new wing has been erected on land given by the Duke of Bedford and contains ten beds, a laundry, and nurses' quarters. It is to be known as the Gill wing. The Tavistock Hospital now contains 25 beds and last year 125 in-patients were admitted and 558 out-patients were treated.

A CASE PRESENTING SIGNS OF PULMONARY STENOSIS DURING LIFE, UNEXPLAINED BY THE NECROPSY, WITH SOME REMARKS ON DIAGNOSIS.

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A MAN, aged 28 years, was admitted into St. George's Hospital under the care of Sir Isambard Owen on June 6th, 1903, complaining of indefinite nervous symptoms. On admission he was found to be very weak and somewhat delirious. The pulse was 84, of moderate tension, with a thickened radial artery; the tongue was moist, tremulous, and thickly coated; diarrhœa was present, from seven to eight motions occurring in the 24 hours; the urine, which was of specific gravity 1010, was loaded with albumin. His mental state was not such as to permit of reliance being placed in his history, but information obtained from relatives pointed to an illness of some three weeks' duration, during which he had suddenly partially lost vision in the left eye. The movement of the chest was equal on both sides. The apex beat of the heart was found to be in the fifth left space one and a half inches outside the left mid-clavicular line; its impulse, thrusting in character, suggested hypertrophy. Præcordial dulness extended transversely from the right border of the sternum to within one inch of the anterior axillary line; vertically, it merged above into a dull area occupying the inner part of the upper two left spaces and involving the manubrium sterni. In the second left space, at a distance of about half an inch from the left sternal border, systolic pulsation was visible and on palpation a long-sustained thrill was felt. On auscultation the thrill was found to correspond with a long purring systolic murmur leading up to an extraordinarily loud and abrupt second sound. A diastolic shock was also palpable. The murmur was pretty generally conducted over the præcordium, right and left of the sternum, but diminished immediately in intensity on moving the stethoscope away from the region above mentioned. Over the dull area in the first and second left spaces intense tubular breathing was heard, entirely different in character from the harsh breathing ordinarily heard in this situation and strongly suggestive of the presence within the chest of some abnormal source of conduction of the tracheal sounds to the surface, a suggestion which was emphasised by the discovery of tubular breathing over the three upper dorsal spines, extending rather further to the left than to the right. The air entry at both bases was fair and equal on either side, nor was anything further abnormal to be detected in the lungs by physical examination. The abdomen showed some tympanites and was slightly tender.

It seemed difficult to make the various elements of the case conform to the clinical picture of any one definite morbid entity. The diarrhœa, albuminuria, and mental condition were conformable to a diagnosis of uræmia supervening in disease of the kidney but the signs in the chest were baffling. The character and position of the murmur seemed to indicate stenosis of the pulmonary artery; the area of dulness and intense tracheal breathing pointed to mediastinal tumour of some sort as a possible cause of the stenosis. Other signs of aneurysm were not sufficiently marked to be confirmative; tracheal tugging was thought to be present; the pupils were dilated, and the left was a little larger than the right; the radial pulses were equal; the voice was not abnormal. Examination of the larynx was not attempted in the condition in which the patient was. There was no definite sign of pressure in the left bronchus. The arch of the aorta could not be felt on deep palpation in the episternal notch nor was the pulsation in the neck noticeably forcible. The heart revealed no sign pointing to disease of the aorta. On the other hand, there was no special sign of growth, such as obstruction of the superior vena cava. Some abnormal condition was certainly suspected within the mediastinum but exactly what was not clear. The course of the man's illness after admission was short. His delirium increased and he became restless and noisy, sleeping but little during the night. On the next day he had an attack of what seemed to be acute œdema

of the lungs. He sat up in bed panting for breath, became pallid and cyanosed, and broke into a profuse sweat; the temperature was subnormal and the pulse was feeble. Examination of the lungs revealed the presence universally of fine and medium-sized liquid râles. He recovered, in some sort, from the urgency of this attack, but died the same night in a semi-comatose condition.

At the post-mortem examination the body was found to be well nourished; there was some œdema of the feet. The lungs were bulky and generally œdematous; they appeared to cover the structures of the mediastinum anteriorly to the normal extent. The infratracheal glands were pigmented and somewhat swollen; there was also slight swelling of the bronchial glands. The heart was large, weighing 23 ounces; it lay with its long axis disposed rather more horizontally than usual. The ventricles, especially the left, were much hypertrophied, and the left occupied more of the anterior surface of the heart than normal. The hypertrophy of the interventricular septum was particularly well marked and the septum bulged unduly into the lumen of the conus of the right ventricle. All the valves of the heart appeared to be normal; the sigmoid valves of the aorta and pulmonary artery were perfectly competent. There was some atheroma of the ascending aorta involving the first primary divisions. The pulmonary artery was in every respect normal. No abnormality of any kind was found in the mediastinum. The kidneys presented the typical appearances of chronic parenchymatous nephritis undergoing contraction. There was acute catarrh of the intestinal tract from the cardiac end of the stomach downwards.

The pulmonary region of the heart has well been called "the area of romance"; many are the systolic murmurs audible within it, more numerous still are the theories advanced for their explanation; yet, clinically, the character of such murmurs and their context often serve to distinguish them from one another. A general discussion of pulmonary systolic murmurs and their underlying conditions is far beyond the scope of this article; nevertheless, in view of the difficulties presented by the case here cited it may not be without interest to consider one group of them. We sometimes hear in the pulmonary region a systolic murmur, long, rough, almost purring in character, leading up, if the state of the pulmonary valves permit, to an accentuated pulmonary second sound. The murmur is accompanied by a thrill; sometimes, indeed, according to Quincke, the artery can be seen pulsating in the second space. The position of maximum intensity of such murmurs are always in the second left space close to, and infringing on, the sternal border. Such a murmur differs entirely in character from the hæmic murmur and from the murmurs produced in aneurysms or new growths. We recognise it with few exceptions as denoting stenosis of the pulmonary artery. So far diagnosis is easy. The above case shows what difficulties of diagnosis may present themselves when we attempt to determine the underlying cause of the stenosis.

Briefly, stenosis of the pulmonary artery may be classified into: (I.) actual stenosis; and (II.) relative stenosis—i.e., relative to actual dilatation of a distal portion. Actual stenosis may be produced from (1) intravascular and (2) extravascular causes. Intravascular causes include: (*a*) congenital stenosis of the vessel associated with the disease of the pulmonary valves; and (*b*) certain rare cases in which a thrombus in the vessel has given rise to signs of stenosis before death. Of extravascular causes we may mention (*a*) pressure on the artery—(i.) by aneurysms, growths, and enlarged glands, (ii.) by the ventricle of the heart itself, especially in the presence of retracted lung, and (iii.) by great pericardial effusion; (*b*) displacements of the heart such as occur in (i.) pleural effusion and (ii.) retraction or collapse of the lung; (*c*) traction on the pulmonary artery itself by adhesions or by lung disease or constriction of it by pericardial thickening; and (*d*) actual stenosis of which the causes are still obscure. Relative stenosis occurs naturally where there is distal dilatation of the artery. Such dilatation often occurs when the pressure in the pulmonary artery has been for a long time excessive, as in mitral stenosis, and is usually associated with chronic disease of the vessel wall.

It would seem at first that there should be no difficulty in assigning pulmonary stenosis to congenital causes when these are present, the appearance and age of the patient being distinctive, and no doubt a correct diagnosis is usually made in such cases. Sansom,[1] however, has pointed out that pulmonary stenosis of congenital origin may exist in patients of an advanced age (the oldest cited was aged 67 years) and that it is particularly in these cases that the appearance of the patient is misleading, cyanosis and the characteristic facies of morbus cæruleus being often absent. Murmurs due to congenital stenosis, however, he states, tend to increase in intensity on deep inspiration, a fact which may suffice to differentiate them from murmurs produced by some kinds of extravascular stenosis in which the converse holds. The pulmonary second sound, too, is almost always absent in congenital cases because of disease of the valve itself.

It may, as the above case shows, be extremely difficult to determine the particular extravascular cause giving rise to stenosis of the pulmonary artery. It is easy to prophesy after the event, and no doubt more exact scrutiny into the nature of the collateral signs of the present case would have stayed us from entertaining the possibility of aneurysm or new growth. Certainly the abnormal presternal dulness and tubular breathing were suggestive, and it is difficult to believe that the small amount of glandular enlargement revealed at the post-mortem examination could have been sufficient to give rise to these signs. In this connexion the late Dr. G. W. Balfour has written[2]: "In the whole of my experience of cardiac disease I have met with nothing more remarkable and at first sight more inexplicable than the co-existence of a loud murmur in the pulmonary region with a perfectly normal heart." Sansom[3] thus speaks upon the subject: "Occasionally we are able to diagnose the presence of a new growth or aneurysm. Now and then, however, the diagnosis is sufficiently obscure and must be made *per viam exclusionis*, and is, after all, largely a matter of probability." Collateral signs of growth or aneurysm should certainly give us some indication, but it is obvious from a consideration of the present case that the suggestion they give should only be accepted cautiously and after careful consideration.

Balfour[4] refers to six cases of pulmonary systolic murmur collected by Quincke in which the only common abnormality seemed to be either a definite retraction of the lung from the anterior mediastinum or some cause leading to insufficient expansion of it. Quincke explained the production of the murmur as follows: "In these cases the force of the ventricular systole, which is usually expended in moving aside a cushion of overlying lung, now acts directly upon the pulmonary artery and causes stenosis of it by pressing it against the anterior wall of the chest." In justification of this hypothesis he pointed out that the murmur disappeared in deep inspiration. Balfour himself quotes three cases showing similar retraction of the lung. In two of these there was hypertrophy of the ventricles, a condition which would, no doubt, assist in bringing about stenosis of the pulmonary artery, presuming it to be possible from such a cause, and as well for the reason Quincke[5] gives—namely, that the hypertrophy is always relatively greater in the antero-posterior diameter. Broadbent[6] calls attention to a variety of pulmonary systolic murmur occurring in adolescents "which may be loud and rough," not the result of anæmia but produced by vibrations of the conus arteriosus. As a rule the conus arteriosus is protected from the chest wall by a cushion of lung. When this is incomplete for any reason the conus arteriosus is pressed against the chest wall, producing an eddy.

Displacement of the heart, presumably by kinking of the pulmonary artery or twisting, may be a cause of stenosis and give rise to a loud pulmonary systolic murmur. Sir Richard Douglas Powell mentions a case of pleurisy with effusion in which, before the fluid was withdrawn, a loud pulmonary systolic murmur was audible; the murmur disappeared when the heart returned to its normal position after paracentesis. Fowler[7] has explained how a pulmonary systolic murmur may be caused by traction on the pulmonary artery by scar tissue in old lung disease. I may, perhaps, here be excused for calling attention to two cases that were under my care as house physician at the Brompton Hospital. Both were cases of mediastinal tumour, the nature of which was uncertain. In both, shortly after signs of sudden collapse of the left lung had shown themselves, a loud systolic murmur, accompanied by a thrill, developed in the

[1] Sansom: Diagnosis of Diseases of the Heart and Aorta, p. 270 et seq.

[2] Balfour: Clinical Lectures on Diseases of the Heart and Aorta (Lecture VIII.).

[3] Loc. cit. [4] Loc cit.

[5] Quincke: Beiträge zur Entstehung der Herztöne und Herzgeräusche, Berliner Klinische Wochenschrift, 1870, No. 21, S. 239. Also Edinburgh Medical Journal, January, 1871, p. 667.

[6] Broadbent: Heart Disease, p. 222.

[7] Fowler: Proceedings of the Medical Society of London, vol. viii., p. 26.

pulmonary region. I was inclined at the time to credit the increasing pressure of the growth on the artery from behind as being the causation of the murmur in both cases, but on reflection it has seemed possible that they were really due to stenosis produced by the displacement of intrathoracic structures following on collapse of the lung.

When we consider how common are diseases which are likely to cause increased pulmonary tension and consequent dilatation of the pulmonary artery, it is curious how rarely relative pulmonary stenosis gives rise to a systolic murmur. In mitral stenosis, perhaps the most frequent cause of such dilatation, a pulmonary systolic murmur is hardly ever to be heard, a fact which Balfour tried to explain away by the statement that murmurs are often absent even though the conditions which should give rise to them are present, an explanation which seems hardly to deal finally with the subject. A more ingenious suggestion has been offered by Quincke—namely, that in most cases of mitral stenosis the dilatation of the artery is accompanied by more or less dilatation of the pulmonary ring and conus arteriosus, so that no stenosis is usually present. He quotes a case of his own in which a murmur was present; in this case the right ventricle was hypertrophied but not dilated.

There remain cases in which no satisfactory explanation of the stenosis can be advanced. Among them the above case must, I fear, for the present be grouped. No growth or aneurysm was found within the mediastinum to press upon the pulmonary artery and to cause stenosis of its lumen, nor was the left lung in any way retracted. Two facts revealed by the necropsy are perhaps worthy of mention. The first relates to the position of the heart. It will be remembered that the antero-posterior axis was more transversely placed than normally. In such a position the shoulder, so to speak, of the heart would occupy a higher position in the chest and also be rotated nearer to the pulmonary artery. The force of ventricular action would be then at a better advantage to compress it, any hypertrophy tending to enhance the probability of such a result. The altered position of this portion of the heart might also be supposed accountable in some measure for the abnormal dulness in the first and second spaces. The second point has relation to the undue hypertrophy of the septum. The septum is described as bulging into the cavity of the conus arteriosus. Might not the presence of such a bulging be a cause of stenosis, if not of the artery itself, at any rate of the ring and conus behind it? Which of these two facts, or whether either of them, played any part in producing the murmur heard during life it is impossible to determine on the evidence of a single case.

Two interesting conditions, not relating to the pulmonary artery, have been described in the literature which give rise to murmurs closely simulating the murmurs of pulmonary stenosis. It appears according to Balfour[1] that in certain cases of aortic aneurysm where the left sinus of Valsalva is affected, the pouch lies behind the sternum and to a certain extent in the second left space. In these cases a loud pulmonary systolic murmur is heard, accompanied by a thrill and followed by an accentuated second sound. He says that the condition is only distinguishable from pulmonary stenosis by the fact that any pulsation occurring is greater in intensity than the apex beat of the heart and that collateral symptoms of aneurysm, such as pain, &c., are present. We should also expect the murmur to be well conducted into the vessels of the neck, which is of course not the case in pulmonary stenosis. Sansom[2] also mentions a rare but interesting condition—namely, patent ductus arteriosus. In the cases he observed a loud crescendo systolic murmur was heard in the second left space, followed by an accentuated second sound. The murmur, he remarks, was particularly well heard in the vessels of the neck and over the descending aorta behind. The condition was compatible with almost perfect health. Both of these conditions must be rare—they have certainly never come within the range of my limited experience. Two other features relating to the physical signs observed in the above case are as extraordinary and perhaps as inexplicable as the systolic murmur. The existence of a so greatly accentuated pulmonary second sound, without any apparent cause for high tension in the pulmonary artery, and the intense tracheal breathing which was audible over the upper part of the sternum and the back, and for the presence of which the necropsy revealed no cause.

In conclusion, my thanks are due to Sir Isambard Owen for permitting me to make use of the case in this article.

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[1] Loc. cit. [2] Loc. cit.

A NOTE ON TONSILLAR ENLARGEMENTS AND THEIR TREATMENT.

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AMONG the many minor ailments to which the body is subject there are some it may be said the frequency of the occurrence of which seems to have bred almost insensibly a kind of contempt which has sapped most insidiously the habit of considering systematically and carefully the *pros* and *cons* of their treatment. The old adage of "familiarity breeding contempt" is true in surgical as well in other matters, and perhaps in no branch of surgery is this more often the case than in the treatment of the various enlargements to which the tonsils are liable. The reason of this is not far to seek. In a crowded out-patient room when time is limited and where many children, not always the cleanest or in the best of tempers, have to be examined, the constant reiteration of the same variety of case becomes wearisome and in spite of himself the surgeon is prone to lapse into haste and thus the tonsils are condemned to a cursory examination and if found enlarged short shrift is their portion and they are forthwith removed.

Now every tonsil which is enlarged, it is hardly necessary to say, does not require ablation, and starting with the premiss that every part of the body has its own special object and purpose we must admit that until we are able better to understand the uses and functions of these somewhat peculiar organs we should be more sound in our surgery were we to incline more often to the side of conservation than to that of extirpation. The argument which has been supported by many authorities that patients get along perfectly well without their tonsils seems to me to be a poor attempt to justify a lazy method of treatment and but little worthy of a scientific profession. On many occasions I have witnessed the removal of tonsils which might well have been saved by palliative measures properly applied, or at least by less heroic means than complete extirpation. Again, on many occasions I have seen both organs submitted to the guillotine when one would have sufficed and as frequently I have seen both removed for conditions in which they were but the innocent "accessories after the fact," the primary cause of the trouble being allowed to escape notice. So long as the fact is ignored that these organs are of some use in the economy and that their diseases are amenable to treatment, so long will their existence be threatened with the guillotine, the bistoury, and the scissors, and so long will their indiscriminate removal stand as a reproach to surgery and provide a gold mine to the unscrupulous. That much may be done for enlargement of the tonsils by judicious palliative treatment is a fact which is fully recognised by most surgeons, but by some the condition has been regarded as one of little promise and hardly worth the trouble entailed in its performance.

What then are the uses of the tonsil? First, and chiefly, they must be looked upon as the scavengers of the oro-pharynx, and in support of this the following points may be mentioned: 1. Their position at the back of the mouth, where the movements of the tongue are least efficacious in cleansing the buccal cavity, points to the necessity of their presence there. 2. Placed between the two constrictors of the oro-pharyngeal space they must be acted upon by them in two ways, first, by being carried by them towards the middle line of the space, and, secondly, by being forcibly squeezed between them during their contraction. Thus the bolus of food in its passage to the pharynx is compressed between the faucial and lingual tonsils at the oro-pharyngeal ring and is thus probably denuded to a great extent of surface bacteria, the compression of the tonsil at the same time possibly serving to cause the exudation of a protective film of lymph by which any organisms may be rendered innocuous during the subsequent passage over the posterior surface of the arytenoid cartilages. 3. The fact that the tonsil is a lymphatic gland placed in a septic cavity and that it is in direct communication with that cavity, suggests that its duty is that of rapid phagocytosis without the mediation of lymphatic vessels. 4. The presence of so much lymphatic tissue, of which the faucial tonsils form only a portion, in the oro-pharynx is evidence of the necessity for protection against bacterial invasion in this situation.

Again, the fact that Störk and others have demonstrated the presence of the tubercle bacillus in the tonsils of healthy children and that Park has similarly found streptococci and staphylococci, and other observers the diplococcus of pneumonia, is strong evidence in support of the belief that phagocytosis is one, if not the chief, object of these glands. For it is reasonable to suppose that had these organisms succeeded in passing the tonsils in place of lodging in them, they might have constituted a toxic dose when brought into some *locus minoris resistentiæ* in some other part of the body. Absorption appears to be amongst the duties of the tonsils, although to what purpose this takes place is not clear; for Goodall and Hendelsohn have demonstrated the absorption of substances placed on the surface epithelium of the tonsil. Possibly secretion, as suggested above, and other less obvious functions are included in the rôle of these organs but of these we are as yet in the dark.

That the tonsils undergo atrophy in later life is no argument against their supposed protective function, for when the marked predisposition to the exanthemata, diphtheria, and other infectious states in young children is considered, as opposed to the comparative immunity from such in later years, it is in the natural order of events that, their presence being no longer required, they should to some extent disappear.

Granted then that the tonsils have at least one known duty to perform, and possibly others unknown, their condition is, I submit, deserving of careful consideration before their removal is determined on; otherwise their surgery is debased to the level of unscientific and meddlesome interference. Of the many causes of tonsillar enlargement there are one or two to which attention must be drawn, as being those in which the mistakes I have mentioned are most commonly made, and in which it is desirable to indicate some definite line of treatment.

1. *Simple enlargement or hypertrophy of the tonsil.*—This condition, which has received but little notice in the standard works, is by no means of infrequent occurrence. From time to time one sees little patients whose sole trouble consists in slight obstruction to respiration, especially at night, when they become a nuisance to their parents on account of their snoring. They present on examination tonsils which are of huge proportions, smooth, normal in colour, show no distension of their crypts, no exudation of lacunar secretion, or any rugosity pointing to the presence of chronic fibroid change. The enlargement of such tonsils probably does not depend on any chronic irritation but is the outcome of some tendency to a general hypertrophy of the parenchyma of the gland, the various constituent parts of the organ maintaining their respective proportions to each other. In short, the enlargement is a true hypertrophy and not a hyperplasia. It is perfectly obvious that such tonsils cannot by any means be reduced in size except by partial removal; and indeed, in view of the unsatisfactory nature of such an operation it is better to remove the entire gland, for although little harm may at first accrue to patients so afflicted, yet in time such tonsils produce the common results of impeded respiration; and it must always be borne in mind that in the event of a sudden and acute attack of inflammation of the tonsils and pharynx such large organs as are above referred to become a real menace to life, especially where medical aid is not immediately forthcoming.

I would here strongly protest against the indiscriminate use of the term "hypertrophy"; it has been loosely used to describe all varieties of enlargement of the tonsil, even in works professing technical knowledge. Clearly those enlargements depending on inflammatory processes have no right to a term the etymology of which signifies "increase in size of a *healthy* organ due to increase of exercise or nutrition."

2. *Enlargement due to continued irritation.*—Here one may describe two classes of tonsil—viz., that which is in the early stage of inflammation and that which is affected by the changes produced by chronic inflammation—that is to say, not a *hypertrophied* but a *hyperplastic* tonsil. Now of the causes producing such states the most common is undoubtedly nasal insufficiency or naso-pharyngeal obstruction, from whatever cause arising. In the young the usual cause of mouth breathing is the presence of post-nasal adenoids, while in adults turbinal engorgement or hypertrophy, septal deflections, myxomata, and other abnormal conditions are mainly responsible. The constant passage of bacteria and dust-laden air through the oro-pharynx instead of through the nasal cavities is incompatible with the healthy state of the faucial and pharyngeal mucous membrane; the result is enlargement of the tonsils with subsequent hyperplasia and folliculitis. If, now, the subsequent history of such tonsils be considered it will be seen at once that those of the first variety, those in which actual fibroid change has not yet commenced, those which are still soft and smooth, but possibly red from subacute inflammation, are only suffering from a temporary perversion from their normal state; the second, on the other hand, are permanently and radically altered histologically. Remove the cause of the trouble in the first variety and in the vast majority of cases the tonsils will return to their original healthy condition; in the second ablation is the only treatment to be considered and should be forthwith carried out.

The above points, although by no means new, are very important, for one repeatedly sees patients condemned to lose both tonsils when a careful examination and a little forethought would have removed the cause of the enlargement and obviated the necessity for a severer operation, or what is rather a needless mutilation. It is quite erroneous to suppose that every enlarged tonsil accompanying post-nasal adenoids calls for removal; my own impression is that a large proportion of young children get perfectly well if the adenoids are first removed, and certainly in doubtful cases it is well to await the result of the primary operation before resorting to ablation. The only exception I would make to this rule is when there is obvious enlargement of the cervical lymphatic glands. It is well known that when the tonsils are inflamed or diseased they may furnish the means of entrance to the tubercle bacillus; Kocher has shown that a septic osteomyelitis may result from an infection originating in the tonsil; therefore when with nasal obstruction and enlargement of the tonsils cervical glandular enlargement is also present, no matter how innocent the tonsil itself may appear, it should most certainly be removed.

3. *Enlargement accompanied by lacunar inflammation.*—The purpose of the tonsillar crypts or lacunæ appears to be uncertain, but they would seem, as suggested above, to be designed (like the valvulæ conniventes of the intestine) to increase the superficial area of the tonsillar epithelium for absorptive and secretive purposes, invagination replacing external reduplication, with the object of economising space in the oro-pharynx. It is, moreover, possible that these pits serve for the better entanglement of bacteria and their more effective removal by phagocytosis. That the crypts are not an unmixed blessing is shown by the readiness with which they become the seat of chronic inflammation or the receptacles of small foreign bodies, such as fish-bones, tooth-brush bristles, &c. Presumably, however, they have their uses in the economy, and are therefore to be cared for and considered as well as other more important structures. Enlargement of the tonsil resulting from lacunar or cryptic disease presents itself in varying stages according to the degree of involvement and chronicity to which such disease has attained. It is most commonly seen in young adults, and therefore is more amenable to conservative treatment than when met with in young children, and when the condition of the patients is considered it is seen to be one of great discomfort, for the constant hawking, obstruction to respiration, recurrent attacks of angina, the spitting up of foul epithelial and bacterial plugs, and last, but not least, the sickening odour of the breath, are all factors in the case which call for energetic treatment.

But here, again, it has been too commonly the rule to suppose that such a state of the tonsil can only be met by its complete eradication. Equally one may say that conservative treatment has been applied to cases for which it was wholly unsuitable. A systematic consideration of each individual case will well repay the time and trouble expended upon it, and in this connexion a factor of great importance and one which has been too often overlooked is the presence of the supratonsillar fossa and its condition in lacunar disease. This structure which, as Watson Williams has pointed out, may extend downwards between the jaw and the superior constrictor of the pharynx and upwards into the soft palate, and which I have myself seen extending backwards for a distance of an inch behind the posterior pillar of the fauces, has a very important bearing on the treatment of lacunar disease; for its interior being invisible it is liable to be overlooked, and yet in this situation there may exist a condition of lacunar inflammation which is incompatible with any effort of conservative surgery although the inner aspect of the tonsil may be comparatively free from trouble. Here may be accumulating a horribly offensive collection of

lacunar secretion swarming with bacteria which cannot be evacuated without removal of the tonsil.

The method of greatest use in this disease from a conservative point of view is that of cauterisation, gargles, douches, and local applications being, I believe, absolutely useless except as subsidiary methods, for it is easy to see that since the trouble lies in the lacunæ themselves, many of which are as much as half an inch in depth, and many of which are filled with foul smelling inspissated secretion, none of these applications ever reach the lacunar epithelium where lie the *fons et origo mali*, and the treatment thus resolves itself into a senseless waste of good drugs.

I would then briefly indicate the conditions which call for total ablation of the tonsils, and those in which conservative treatment may reasonably be expected to succeed. Tonsillectomy is indicated in lacunar disease in the following conditions: 1. Where the whole tonsil is extensively diseased,

FIG. 1.

FIG. 2.

for where nearly every crypt is involved the subsequent fibrosis induced by such extensive use of the cautery as would be necessary is liable to leave the tonsil disorganised and often in a chronically painful condition. 2. When the crypts involved, although few in number, are situated at the upper part of the tonsil and open upon the mouth of a deep supratonsillar fossa. It is in such cases that cauterisation is useless, many of the crypts being out of reach and the fossa acting as a trap for secretion and food particles which rapidly decompose. 3. Where the crypts, although few are involved, occur upon a hard, anæmic, and rugose tonsil, and contain lacunar plugs which are cretaceous and extremely foul. Such tonsils are the result of old-standing hyperplasia and are quite unsuited to treatment by the cautery. 4. When the disease occurs in young children who will rarely permit of any prolonged manipulation in the mouth. 5. When the condition is accompanied by cervical glandular enlargement. 6. Where cauterisation has already been tried and has failed. On the other hand, dilatation of the orifices, evacuation of the contents, and cauterisation of the crypts is especially indicated—(1) in cases where the diseased crypts are neither numerous nor large; (2) where the upper part of the tonsil is healthy and the supratonsillar fossa is shallow; and (3) where the disease occurs in young adults and has not been of long standing.

In treating lacunar disease by the cautery it must be remembered that complete evacuation of the crypts is essential, and for this purpose the instrument depicted in Fig. 1 will be found of great use, its object being to dilate the lacunar orifices which are often much narrower than the cavities themselves. An application of 5 per cent. solution of cocaine is used and with the aid of the scoop shown in Fig. 2 the contents of the crypt are cleared out. The cavity is then wiped out with a small pledget of cotton-wool, anæsthetised with a 20 per cent. solution of cocaine, and thoroughly cauterised with an electric cautery point at a dull red heat. A point of importance is not to attempt too much at a sitting, otherwise the subsequent inflammation is apt to be excessive and may unduly disorganise the glandular substance. My own practice is to deal with not more than two or three crypts at a sitting and to choose those which are at some distance apart. These are allowed to heal completely before the treatment is resumed. The operation is painless and the reaction is but slight if the above points are attended to, and if the cases have been discreetly chosen the result will be found to be perfectly satisfactory; the tonsils are saved and the disease is cured.

As regards the operation of tonsillectomy, I believe most surgeons are in favour of removal by means of the guillotine as being the simplest and least dangerous method; I would venture to suggest, however, that up to the present time a really satisfactory instrument has not been designed. Mackenzie's guillotine, which is the most generally used in this country, seems to me to have several disadvantages, which it shares in company with many less well-known instruments. First, it is much too bulky; secondly, it is straight in the shaft in place of being curved on the edge so as to conform to the shape of the pharynx—consequently tonsils markedly dependent into the pharynx are only caught with difficulty; and thirdly (and this is the most important point), the long axis of the fenestration lies in the short axis of the tonsil, so that in cases of moderately large tonsils only a portion may be removed unless the operator is practised in passing the fenestration round the lower end of the gland first, a matter of no small difficulty to the unskilled. In this connexion I would enter an energetic protest against a supposition which still seems to be cherished in some quarters—viz., that the removal of part of the tonsil will bring about the atrophy of the whole. Such an idea is, I feel sure, contrary to the experience of most surgeons and is responsible for many so-called recurrences of tonsillar enlargement and much discredit to the profession.

As an advocate of the treatment of chronic follicular tonsillitis of limited extent by the electric cautery I have been led to devise the above-depicted crypt dilator and curette for the performance of this operation. The former will be found to differ considerably in its mechanism and character from most of the better-known instruments. It is finer in the point, lighter in the hand, more easily adapted to either side, and better suited to the gradual and forcible dilatation of the tonsillar crypts. The curette is a double-edged one, the loop being set at a slight angle; by this means crypts lying far back in the tonsil are easily reached and evacuated. The instruments have been made to my order by Messrs. Down Bros. and have proved in every way satisfactory.

Mansfield-street, W.

ON SOME UNCOMMON FORMS OF NEURITIS OF THE UPPER LIMB WITH AN UNUSUAL ETIOLOGY.

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OF the forms of neuritis which I describe some are of unusual distribution and in all the etiology is obscure. It is well known that the palsies of the brachial plexus, described by Duchenne and Erb, in which the site of the disease is in the fifth and sixth nerves, and that described by Déjerine and Mlle. Klumpke, in which the inferior part, the eighth cervical and first dorsal nerves is affected, may be of non-traumatic origin. The onset may be insidious or abrupt: in some the paralysis has occurred during convalescence from an acute infection; in others the sudden onset has suggested a vascular lesion. Farquhar Buzzard[1] has recently described a series of cases in which one nerve only of the brachial plexus was affected, and a similar case has been recorded by Edwin Bramwell.[2] Buzzard is inclined to believe that localised vascular changes may occur in the spinal nerves, the cords of the brachial plexus, and the nerves of the extremities. I am inclined to think that in two of my cases (Nos. 2 and 3) the cause, in part at least, was of a vascular nature. The cases are (1) complete monoplegia; (2) multiple localised neuritis; (3) a partial Erb's paralysis; (4) two cases of ulnar neuritis; and (5) two forms of professional palsy.

CASE 1. *An acute toxic condition followed by complete monoplegia with wasting of muscles; pain, but no anæsthesia; recovery.*—The patient, a healthy-looking sailor, aged 21 years, was admitted on Nov. 6th, 1902, complaining of loss

[1] Brain, Summer number, 1902.
[2] Review of Neurology and Psychiatry, April, 1903.

of power in the right upper limb. The history is that about two months previously when in Mobile, Alabama, and in otherwise good health, he was suddenly seized with pains in the shoulder, arm, forearm, and knee-joint of the right side, and the next morning he found that he had lost power in the right upper limb so that he was unable to wash himself. About a week later swelling occurred in the right knee-joint and also slight swelling in the ankle and the wrist. Soon after the onset of weakness recovery began, and after being a fortnight in hospital he sailed for New York, still with marked weakness of the right upper limb and swelling of the knee-joint. At New York he suffered from malaria and went into hospital again and towards the end of October was sent to Liverpool by the German Consul. He was a healthy-looking man with no disease of the internal organs. His temperature was normal. There were seen to be marked wasting of the right upper extremity and considerable loss of power. Thus in the hand the thenar, hypothenar, and interossei muscles were markedly wasted and to an equal extent. The loss of power corresponded to the wasting, and the movements of the thumb and fingers due to the intrinsic muscles of the hand were feebly performed. There was no claw hand and the grasp equalled 95 with the dynamometer compared with 110 on the left side. At the wrist-joint the movements of lateral flexion, extension, and flexion were similarly weak and the forearm was much thinner than its fellow on the opposite side. The triceps, flexors of the elbow, and supinator longus were also wasted and weak. Of the muscles of the shoulder girdle, the deltoid was the most affected, being considerably atrophied; the patient could only abduct the arm with great feebleness. The supraspinatus and infraspinatus muscles were atrophied and external rotation was very feeble. The position of the scapula at rest seemed normal and on attempting to approximate the inner borders of the shoulder-blades the movements were symmetrical. I could not detect any weakness in the trapezius, rhomboid, or levator anguli. The serratus magnus, latissimus dorsi, and pectoralis, although acting fairly strongly and with no perceptible atrophy, were undoubtedly weaker than on the left side. There was no loss of sensation of any kind nor did the patient complain of paræsthesiæ such as numbness or tingling. Pain, however, was still a factor of the patient's illness; this was present on any movement of the shoulder-joint and on pressure over the site of the nerves at the root of the neck. Although pressure of the paralysed muscles did not produce pain, there was a tender spot on the deltoid muscle above its insertion into the humerus. There were no oculo-pupillary changes and no fibrillary twitchings of the muscles. With regard to the electrical reactions I was surprised to find these practically normal; to faradisation all the wasted muscles reacted nearly as briskly as on the left side and the constant current gave the ordinary polar reaction. In the right lower limb there was found to be a considerable amount of fluid in the knee-joint associated with wasting of the extensor muscles which gave normal electrical reactions. The knee-jerks were normal; there was no ankle clonus and the plantar response was of the flexor type. The tendon and periosteal reflexes of the upper limb were also normal. The patient was treated by massage and faradism and the limb rapidly improved. The deltoid was the last to recover and distinct atrophy was visible there when absent in the other muscles. The synovitis was treated with success by the application of Scott's dressing. On Jan. 14th the patient was discharged with slight disabilities only.

In considering this case the condition in the lower limb may, I think, be admitted as due to the chronic synovitis of the knee-joint. We have thus to deal with a monoplegia of the upper extremity following some acute toxic condition probably allied to rheumatism, for though the history of the patient is not sufficient to establish that diagnosis it is not inconsistent with it. The great difficulty is the differentiation between a poliomyelitis anterior acuta and a neuritis. This is especially important in the early stage of these diseases, since the prognosis differs, a complete recovery after disease of the cord being rare. In my patient when first seen it was obvious that all the muscles were recovering power and this is in favour of a lesion in the nerves. The maintained electrical irritability and presence of the periosteal and tendon reflexes are difficult of explanation and can only indicate that the lesion though wide in distribution was slight in degree. The absence of any loss of sensation, though characteristic of poliomyelitis, is often seen in peripheral affections. More important are the severity and duration of pain in the nerve trunks. When pain is present in poliomyelitis it is due either to a coincident neuritis or a meningitis. An interesting discussion of this question of diagnosis is given by E. Brissaud and Loude[3] in connexion with a case of crural monoplegia, and Feinberg[4] relates a brachial monoplegia following influenza much resembling the above in distribution, though more severe and notable for the existence of signs of sympathetic paralysis—a fact considerably against poliomyelitis. Monoplegias from peripheral neuritis are rare. Déjerine[5] says he has met with two clear examples. He writes: "De monoplégie brachiale avec atrophie musculaire considérable, douleurs spontanées, hyperesthésie excessive à la pression des troncs nerveux et des masses musculaires, intégrité de la sensibilité objective, et dans lesquels la guérison complète, totale, au bout d'un temps plus ou moins long, sept et dix mois dans mes cases, est venue prouver que les nerfs périphériques étaient seuls en cause." In the above case the character of the pain, its persistence for several months, and the complete recovery of the upper limb afford, I think, a strong presumption that the lesion was not in the spinal cord, but rather an inflammatory condition affecting the nerves of the brachial plexus.

CASE 2. *Localised multiple neuritis: left upper limb, wasting of muscles of the hand, palsy of the extensors of the fingers and of the biceps, anæsthesia of the ulnar border of the forearm; right upper limb, wasting of triceps with analgesic area; loss of knee jerks; partial recovery; under observation three years. (The patient showed signs of vascular degeneration.)*—The patient was a man, aged 56 years, a boiler-maker by occupation, and was first seen on Sept. 30th, 1900. His history was that six weeks previously he was attacked with severe pain, bad enough to keep him awake at night. The pain was localised chiefly to the left shoulder but passed down the arm; it followed no particular distribution and never reached as far as the fingers. He complained of loss of power in his left arm and especially in his inability to grasp his hammer with sufficient force, which he had been accustomed to steady with the left hand whilst the right hand was used to apply the force. He did not now complain of any numbness or sensations of pins and needles and the pain was much less severe. On examination the patient was seen to be a rather heavily-built man, looking considerably older than his real age. The radial pulse was slow and intermittent and the artery was distinctly thickened. There was a well-marked systolic bruit over the base of the heart; the apex was slightly displaced outwards and downwards. The left pupil was slightly smaller than the right, but there was no narrowing of the palpebral fissure. There was found to be marked wasting in various groups of muscles in both upper extremities and also objective disturbance of sensation. On the left side there was marked wasting of the small muscles of the hand, especially in the first dorsal interosseous, which did not respond to faradism and barely to the constant current. The other interossei also were wasted and had lost their faradic irritability; the hypothenar eminence was also considerably wasted but gave a feeble response to faradism; the abductor and opponens of the thumb were fairly well developed, but the inner part of the thenar eminence was distinctly flabby and showed a diminished electrical irritability. The wrist was dropped but could be raised slightly against resistance. The extensors of the fingers were weaker than the extensors proper of the wrist. The grasp was feeble, but the flexors of the wrist were not notably deficient in power. At the elbow-joint flexion was distinctly enfeebled, but the triceps, supinator longus, and shoulder girdle muscles were strong. On testing the sensibility a well-defined area was found on the inner border of the forearm on both the anterior and the posterior aspects, passing along the palm and dorsum of the hand and involving the little and part of the ring finger, in which sensation was markedly defective. In this region moderate pin pricks were not felt and there was distinct deficiency in recognising heat, as tested by a hot pin head, or cold, as tested by evaporating drops of ether. Touch, as tested by the blunt head of a pin, was less affected than the other forms of sensation; he knew he was being touched but there was obvious impairment as compared with the other side. On the right side the triceps were distinctly atrophied and gave a feeble reaction to faradism and an altered polar contraction with the constant current; it was thought also that the flexors of the elbow were weak, but there were

[3] Revue Neurologique, 1902, p. 1018.
[4] Neurologisches Centralblatt, 1897.
[5] Sémiologie du Système Nerveux, p. 520.

here no atrophy and no changed electrical irritability. No other muscles were at all affected. A small oval area on the outside of the arm, extending from below the site of insertion of the deltoid, was found to be distinctly analgesic. In the lower extremity no defect of movement or sensation was observed, but the patient complained of occasional pains shooting from the sacrum down the posterior surface of the limbs and of some numbness. The knee-jerks and ankle-jerks were absent; the plantar response was of the flexor type. This patient has been under continued observation, the last note of his condition being taken on Sept. 6th. He has been taking strychnine from time to time and his condition is now considerably improved, the grasp is now nearly as strong as that on the right side and the wasting is not so pronounced, the disturbance of sensation has disappeared, but the pain in the lower extremity still troubles the patient who has, however, obtained considerable relief from the use of a menthol cone. The present condition will be understood from the following note on the electrical reactions: "On the left side the hypothenar muscles and interossei barely respond at all to faradism and the reaction of the thenar muscles is also diminished. The extensors of the wrist, thumb, and little finger and lateral flexors respond naturally, but no response can be obtained from the extensors of the second and third fingers; the other muscles react well to galvanism, the affected muscles act feebly, but the polar reaction always gives K.C.C. > A.C.C. On the right side the atrophy of the triceps is very well marked, faradism feeble, galvanism feeble K.C.C. > A.C.C.; no other muscles affected." The knee-jerks are still absent.

The case seems to be one of a multiple localised neuritis brought about partly by the occupation of the patient, aided by defective nutrition from disease of the vessels. Atheromatous neuritis is well recognised and is characterised, according to Gowers, by great irregularity of distribution, well illustrated in the above case. Some literature on the subject is given in Ross and Bury's well-known work. The above case is, however, hardly comparable with the form of neuritis that arises in old people with advanced senile vascular degeneration and its distribution depends, I think, in part, at least, on the nature of the patient's occupation, which is suggested by the wasting of the small muscles of the left hand, similar to that seen in those whose work involves the firmly grasping of objects in the palm, and, on the other hand, in the atrophy of the triceps of the right side, which would be largely used in holding the hammer with the arm flexed. Some forms of professional neuritis are, however, probably due to a peripheral affection of the terminal endings of nerves, whilst here the distribution of the anæsthesia on the inner side of the forearm, with the wasting of the small muscles and possibly also the diminished size of the pupil, suggest a lesion of the inferior part of the plexus of the Klumpke type. On the right side the wasting of the triceps and the area of analgesia over the distribution of the posterior division of the circumflex nerve point to a peripheral affection. On the left again branches of the musculo-spiral and musculo-cutaneous are affected and the condition of the lower limbs is also important, hence I consider the case is best designated as a multiple localised neuritis. Remak[6] has described a similar kind of affection occurring acutely from the influence of fatigue and cold; in his case the biceps was alone affected on one side and the deltoid and suprascapular and infrascapular on the other side. Remak describes this case as one of acute multiple localised neuritis and considers that the lesion was partly in the plexus, a partial Erb's palsy, and partly a peripheral affection.

CASE 3. *Prophylactic injection of diphtheria antitoxin, followed in a week by acute universal urticaria and swelling of the right shoulder-joint; palsy of the deltoid and infraspinatus; recovery in four months.*—Early in October, 1902, a medical practitioner, owing to the presence of a suspicious case of sore throat, caused himself and the other members of his household to be injected with the diphtheria antitoxin. This was followed in the case of one of the maids by the appearance of an erythema and some swelling of the knee-joint. Nothing unsatisfactory occurred in any other person. At the end of a week the medical practitioner enjoyed a day on the links. The same evening he was attacked by a violent universal urticaria and suffered intense pain. This subsided in the course of 48 hours and left the patient with a swollen right shoulder-joint and a powerless arm; the swelling rapidly subsided and he was seen by me a few days after the onset. It was found that manipulation of the shoulder or any pressure about the deltoid or scapular muscles gave rise to intense pain. There were also complete loss of power in the deltoid and infraspinatus muscles and a weakness in the biceps and supinator longus. The deltoid and infraspinatus were flabby and toneless and rapidly underwent marked wasting. These two muscles gave the complete reaction of degeneration. Power of abduction or external rotation of the shoulder was completely abolished; but the pectoralis did not seem to have been affected. Under treatment by douching and a powder of half a grain of codeia, two grains of salicylate of quinine, and eight grains of phenacetin, ordered by Dr. Armstrong of Buxton, the pain gradually subsided and I was able to examine the condition of the muscles more closely. About a month after the onset it was found that the patient was unable to abduct the arm at all but could raise it to a horizontal position in the sagittal plane. The manner of doing this was as follows. The body was bent towards the affected side; in this way gravity produced an external rotation of the humerus, so that the palm looked forward; in this position the pectoralis major, coraco-brachialis, and anterior fibres of the deltoid were placed in the most favoured position for raising the arm. If when thus raised to the horizontal level the arm was rotated inwards so that the dorsum of the hand looked upwards it could no longer be supported and fell at once to the side; the action of the anterior fibres of the deltoid is usually considered necessary for this movement. I could, however, detect no action of that muscle nor did its anterior fibres give any reaction to faradism. The infraspinatus muscle showed no sign of recovery and there was still some weakness in the biceps and supinator longus. I regret that the electrical excitability of these two muscles was not noted or the condition at Erb's point. No objective disorder of sensation could be discovered, but considerable pain could still be easily elicited by pressure about the shoulder-joint. The patient was now treated by daily applications of massage and galvanism and small doses of strychnine given subcutaneously. Recovery was very slow and it was not until about the middle of December that any power returned in the deltoid or infraspinatus muscles and the presence of faradic excitability was not noted before Jan. 28th. Since then he has progressed to a practically complete recovery, though there is yet a decided hollow below the scapular spine.

The combination of total paralysis of the deltoid and infraspinatus with weakness of the biceps and supinator seems to localise the neuritis as being in the fifth and sixth nerves of the plexus, in fact, a partial Erb's paralysis. The history of the onset is curious; though diphtheria antitoxin frequently gives rise to erythemata and urticaria, so far as I am aware the severity of such skin lesions never approaches that from which my patient suffered; also the interval of a week is unusual for such manifestations, but the occurrence of similar symptoms of less intensity in another person who was inoculated with the same serum cannot be ignored. A day's golf can hardly be responsible and there is no evidence of errors of diet. I am inclined to think that the serum was not without influence in producing the condition and that the nerve lesion was also due to the same kind of acute inflammatory disturbance witnessed on the skin.

CASE 4. *Ulnar neuritis with wasting of the muscles of the hand and anæsthesia; no obvious cause; partial improvement.*—The patient, a woman, aged 27 years, was first seen early in April, 1903. She was healthy-looking and was by occupation a machinist but did not use her hands much in her work. She complained of wasting in the muscles of the right hand which she had noticed for about five months previously. It was found that the hypothenar eminence, the interossei, and the inner part of the thenar eminence were distinctly wasted. The hand had a characteristic position, the little and ring finger showing the *main en griffe* in a fairly marked degree, this condition in the two outer fingers being much less obvious. The abductor indicis which was most affected did not react to faradism and gave A.C.C. > K.C.C. The other interossei gave also no reaction to faradism but the normal polar reaction to galvanism. The hypothenar muscles and the muscles on the inner side of the thenar eminence reacted feebly to faradism. The outer muscles of the thenar eminence, on the contrary, contracted strongly on electrical stimulation. In accordance with this abduction of the thumb in a plane at right angles to that of the palm was

[6] Neurologisches Centralblatt, 1896.

carried out with fair strength, whilst the movement of adduction was weak. The lateral movements of the fingers were practically absent and the grasp was feeble. No other weakness could be detected, the movements of the wrist were normal, and all the muscles of the forearm, including the flexor carpi ulnaris, reacted to faradism. There was a very distinct area of disturbed sensation extending from the distal extremity of the ulnar bone on to the palm and dorsum of the hand and involving the little finger and most of the ring finger. On the little finger it was almost absolute, the patient being unable to recognise either the head of a pin or a sharp pin-prick; small blisters could also be raised and the ether spray could be applied without any recognition. On the palm of the hand and over the front and back of the ring finger the anæsthesia was only relative. The patient complained of a numb feeling along the border of the little finger. The lower extremity was natural in all respects and the pupils were equal and reacted to light. The patient has been under constant observation since she was first seen. Under the influence of galvanism the disorder of sensation has disappeared completely, but the paralysis remains much the same, and the muscles, though appearing more fleshy, still give no reaction to faradism.

The interest in the case lies in the absence of any known etiological factor. The work in which the patient was engaged does not appear to have been of the kind capable of causing a professional neuritis. The only suggestion of a cause is to be found in the fact that six weeks before the onset of symptoms the patient had been confined, but the puerperium was perfectly normal and not associated with debility. Sir William Gowers relates a case of a woman who suffered from neuritis of the ulnar nerve twice after childbirth, but in this case there was a long exhausting labour. I regard the prognosis as bad and expect the atrophy will remain, as in the next case to be related.

CASE 5. *Wasting limited to the muscles of the hand supplied by the ulnar nerve; no known cause; no anæsthesia; stationary condition for three years.*—A young man, aged 18 years, consulted me on May 13th, 1901, on account of wasting in the muscles of the right hand. He had noticed the condition for about two years but could give no reason for it. The only fact elicited was that the patient was an unusually good pianist and for some time back had been practising octave scales. The condition found was practically identical with that present in the preceding case with the exception that no disturbance of sensation could be found nor was there any numbness or tingling. The atrophy involved the hypothenar muscles and the interossei and the inner part of the thenar eminence, and in these muscles faradic irritability was abolished and faint contractions only were obtained from the constant current. The position of the fingers was the same as in Case 4, the two inner fingers being more paralysed than the outer ones. No other abnormality was detected, the reflexes and power in the lower extremity being normal. He was carefully treated by applications of the galvanic current, but his condition has remained stationary, and when seen by me last on June 27th of this year no alteration from his original state was discernible.

In both this and the preceding case the atrophy was sharply limited to the muscles of the hand supplied by the ulnar nerve and no weakness could be detected in the flexors of the fingers. This localisation of paralysis and the distribution of the anæsthesia in Case 4 exclude a uniradicular lesion, as described by F. Buzzard, and point to a neuritis affecting the ulnar nerve below the place where it becomes superficial at the inner side of the wrist. They resemble a group of cases described by Lewis Jones,[7] all of which occurred in young people; in some one hand was alone affected and in others both hands. There was no obvious cause. In these cases the small muscles supplied by both the median and the ulnar nerves were affected and mention is not made of any anæsthesia. In 1901 I saw a girl, aged 19 years, with wasting in all the small muscles of both hands and no associated symptoms pointing to disease of the spinal cord. Lewis Jones regarded his cases as examples of a form of neuritis and since the six cases described by him with the three now related occurred in young people under 20 years of age it would appear that age is an etiological factor.

CASE 6. *Wasting of the small muscles of the right hand in a provision dealer's assistant; normal electrical reactions; no anæsthesia.*—This case and the next are inserted as examples of a true "professional" palsy. The patient, who was engaged in a large provision dealer's shop, stated that part of his duty consisted in cutting bacon into a number of slices. He used for this purpose a thin-bladed knife with a long handle, which pressed into the ball of his thumb and he stated that often in one evening he cut as many as a hundred slices. He began to experience pain, then weakness in his work, and when seen by me there was obvious, though not marked, wasting in the thenar muscles, especially on their inner side; the dorsal interossei were also wasted, but not the hypothenar eminence, a fact which probably indicates that direct pressure was a fac or in causing the atrophy. The wasted muscles reacted well to faradism, almost as briskly as on the left side, and there was no loss of sensation. I considered that if the patient could arrange to forego this part of his work the prognosis was good.

CASE 7. *Extreme atrophy of the muscles of the arm in a boiler-maker; integrity of the shoulder girdle and muscles of the forearm and the hand.*—A man, aged 27 years, a boiler-maker, noticed four years ago difficulty in lifting his hammer with the right arm and the muscles began to waste; this progressed and obtained its maximum intensity in about a year after the onset of the weakness and for the last six months the patient had had to give up his work entirely. When seen by me in January of this year there was extreme atrophy of the muscles on the front and back of the arm, the condition being rendered most noticeable by the contrast furnished by the splendid musculature of the shoulder girdle and forearm muscles. The affected muscles responded to the faradic current to as full an extent as could be expected from their atrophied condition and to galvanism they gave the normal polar reaction. No other feature was noticed in the case, which is thus an example of the extreme atrophy which may follow simple over-use.

The foregoing cases illustrate some of the ways in which primary neuritis may affect the upper limb and may, to a certain extent, be regarded as types of disease. Enumerating these again we may have: (1) Erb's palsy of the upper part of the brachial plexus; (2) Klumpke's palsy of the lower part of the plexus; (3) the uniradicular paralyses described by Farquhar Buzzard in which the lesion is limited to one of the nerves forming the brachial plexus; (4) a monoplegia; (5) a multiple localised neuritis; (6) a paralysis of a peripheral nerve; and (7) a "professional" or occupation palsy, which in some cases is due to an actual neuritis and in others is the result partly of pressure, partly of over-use. Speaking generally one may perhaps say that the existence of these spontaneous forms of neuritis is not sufficiently recognised and ordinarily there is a tendency to consider the cases as due to the much graver condition of ventral cornual disease. The careful search for disordered sensibility, the distribution of the muscles affected, and the age and mode of onset will usually settle the question. Since several of the cases were observed for some years they give an indication of the prognosis, the right estimate of which is also largely aided by the condition of the electrical reactions.

Liverpool.

[7] St. Bartholomew's Hospital Reports, vol. xxix., p. 310.

REMARKS ON THREE CASES OF ACUTE INTESTINAL OBSTRUCTION.

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THE following three cases of acute intestinal obstruction were admitted into St. George's Hospital under the care of Mr. Clinton T. Dent, to whom I am indebted for kind permission to publish them. The cases are reported as they form an interesting series in which acute obstruction was survived for several days and in two of the cases successfully relieved by operation. The old days in which fæcal vomiting was looked upon as the indication for laparotomy are now fortunately over, but cases of prolonged vomiting must still occur, either on account of failure to recognise the condition early or because the patient has at first refused operation. Recovery after three or four days' feculent vomiting gives us more hope for these patients than was formerly thought justifiable. The cases further serve to illustrate the beneficial effects of saline irrigation in abdominal operations, a point which is discussed later.

CASE 1.—A female, aged 28 years, was admitted into St. George's Hospital on Nov. 21st, 1902, with the symptoms of acute intestinal obstruction. On Nov. 16th she gave birth to a child, labour following the normal course of events, but shortly after its completion she was suddenly seized with severe abdominal pain and vomited. The pain continued with acute exacerbations at intervals and the vomiting persisted. Some slight temporary relief was at first afforded by hot applications to the hypogastrium. On the 19th, however, the vomiting became feculent and the general condition was decidedly worse. The bowels acted very slightly on this day after enemata, but apart from this there was absolute constipation, no flatus being passed. The patient was strongly urged by her medical attendant to come to the hospital on the 20th, but refused. She had had two children previously, and a severe attack of perimetritis had followed the birth of the first child two years before the present time. On admission the patient was obviously very ill and was vomiting very foul feculent material. The pulse was 120, the temperature was 99° F., the tongue was fairly clean, and the intelligence was unaffected. The abdomen was considerably distended and active peristalsis was seen especially in the epigastric region; there were pain and tenderness in the right lumbar region, but otherwise the abdomen was soft and moved fairly on respiration. No tumour was palpable. Dr. A. F. Stabb examined the patient and found the uterus enlarged and filled with offensive blood clot; he recommended that it should be washed out but thought that the obstruction was quite independent of the uterine condition. Operation was performed three hours after admission, the abdomen being opened in the mid-line below the umbilicus. The intestines were distended and rather dark; collapsed small intestine was at once found but was first traced in the wrong direction down to the ileo cæcal valve. On tracing it upwards an obstruction was found almost immediately about 18 inches above the ileo-cæcal valve in the right lumbar region. It was of a very complicated nature and the parts could not be drawn up to the wound owing to the presence of old adhesive peritonitis. Two coils of intestine were closely bound together by a short thick band, which at the same time produced very sharp kinking of one coil. At first it seemed impossible to divide the band without wounding the intestine, but by careful stretching a space of about half an inch appeared between the two coils; the band, which was very tough and obviously of long standing, was then divided with scissors. The united coils immediately separated widely and a little of the contents of the dilated portion was seen to pass on at once; the gut below the seat of obstruction, which had been extremely collapsed, was freely irrigated with saline solution and stroked downwards with the fingers, the part nearest the cæcum showing at first no tendency to dilate. The amount of general distension, although considerable, did not seem to warrant puncture of the intestines. The abdominal wound was then closed. The uterus was irrigated and some portions of placenta were removed. Hæmorrhage was free and so the cavity of the uterus was plugged with gauze. The stomach was washed out before and at the end of the operation; at the second washing the stomach was as full as at the first and contained equally foul fluid. The vomiting immediately improved in character and frequency, ceasing altogether in 12 hours. There was at first considerable distension, and the patient was rather collapsed, although stimulants were given freely. The bowels acted 60 hours subsequently to operation after the administration of castor oil and senna, three copious evacuations occurring which gave the patient much relief; a considerable quantity of flatus was also passed by the rectal tube. During the first four days there were much colicky pain and evidence of localised peritonitis in the right lumbar region, and on the 23rd a very severe attack of sharp pain occurred. The plug was removed from the uterus on the 22nd, after which a douche of biniodide of mercury was used twice daily. The further progress was satisfactory and the patient was discharged on Dec. 20th. She was seen again in February and was then quite well.

The obstruction in this case was in great part due to the band, but in some degree evidently to acute kinking of one of the intestinal coils. The attack of acute pain on the 23rd may have been due to the stretching of newly formed adhesions, or to the passage of some solid matter over the site of obstruction, probably to the latter. Mr. Dent stated that he had met with similar pain twice before—once in a case of volvulus and once in a case of appendicitis complicated by a band partially occluding the ascending colon. The sign is an alarming one, but a good one.

CASE 2.—On the same day a female patient, aged 43 years, was admitted with very similar symptoms of the same duration. She had had six children and for years previously had suffered from a severe attack of perimetritis following confinement; apart from this there had been no abdominal symptoms until the present attack. On Nov. 16th she was suddenly seized with acute pain, situated first at the umbilicus, and later settling to the left iliac and lumbar region. Vomiting occurred immediately and continued at frequent intervals. During the first 24 hours there were three or four severe paroxysms of acute pain, but after this the pain subsided to a large extent. The bowels remained obstinately closed in spite of purgatives and enemata and the vomiting became more severe, being stercoraceous on the 18th. Abdominal distension now became apparent and steadily increased. On admission on Nov. 21st the general condition appeared to be good, the tongue was clean and moist, but there was constant feculent vomiting. The abdomen was greatly distended and was tympanitic all over, the liver dulness being diminished. There was tenderness in the left iliac fossa, but no tumour could be made out. The rectal examination was negative. Operation was performed shortly after admission, the stomach being washed out as soon as the patient was under the anæsthetic. A median incision was made below the umbilicus and greatly distended purple-coloured intestines presented. The site of obstruction was found immediately and was in the left iliac fossa, where there was evidence of old peritonitis. One band was broken through on the finger and another broader and exceedingly tough band was divided with the scissors. The constricted small intestine immediately rose to view and did not appear damaged beyond recovery. The contents of the intestine above the constriction appeared to pass on at once. The involved coils were freely irrigated with saline fluid and this enabled reduction of the intestines to be effected easily. The fluid diminished the distension in a most marked manner, but in the epigastric region distension was again beginning before the bandages had been completely applied. The question of opening the small intestine immediately and draining with a Paul's tube was raised, but the patient's condition was so bad that further operative measures were impossible, and so the abdomen was rapidly closed. Fæcal vomiting recommenced at the conclusion of the operation; the patient failed to rally and died an hour later. At the necropsy it was found that a constriction about 20 feet above the ileo-cæcal valve had been completely relieved and no other strangulation or bands were present. The whole of the small intestines and the stomach were full of feculent material. Numerous adhesions of old date existed between the bowels and the abdominal parietes and a coil of small intestines was very firmly adherent to the back of the uterus from which it could not be separated without dissecting off its superficial layer.

CASE 3.—A man, aged 40 years, was admitted on April 9th, 1903, with a history of seven days' acute obstruction. The patient had suffered from dyspepsia for several years but had never had acute abdominal pain before the present attack. On April 2nd whilst standing talking to a friend he had been suddenly seized with very severe pain, referred at first to the umbilicus and later to the right iliac fossa; vomiting occurred immediately and gave some relief. The patient then went to bed and the pain which had lessened again became severe; a second short remission then occurred after which pain and vomiting continued. The bowels remained completely confined; castor oil was given on the 5th and enemata on the 6th, all without effect. The nurse stated that since the 5th the vomit had been brown, smelling very offensively, and had occurred from six to 12 times a day. The pain remained localised to the right iliac fossa throughout. On admission on the 9th the patient looked profoundly ill. There was distension of the abdomen, mostly in the lower part, and the liver dulness was diminished; there was slight tenderness over the lower part of the right rectus muscle but not elsewhere. There was no rigidity, no tumour was felt, and there were fair movements on respiration. The patient twice vomited offensive feculent material whilst in the surgery. Operation was performed shortly after admission. Before the administration of the anæsthetic the stomach was thoroughly washed out and a quantity of brown stercoraceous material was removed, the washing finally being clear; chloroform was then given

and Mr. Dent opened the abdomen in the right semilunar line by a five-inch incision. The peritoneum was found to be inflamed and distended; the intestines were purple-coloured and covered with a few flakes of lymph; there was no free fluid. In the right iliac region a coil of intestine was found rather loosely constricted by an omental band, the exact anatomy of which could not be determined; the distal end of the band was attached towards the region of the appendix. The band was stretched with the finger, divided with scissors, and the proximal end was ligatured; the distal end was clipped, but the clip came away at once and no more was seen of this end. The intestine below the constriction was very collapsed; above it was moderately distended with flatus; at the level of the constriction ulceration had occurred through the peritoneal coat and partly through the muscular coat. The intestines were irrigated with saline fluid throughout the operation. At the end of the operation the stomach was again washed out, as the patient commenced to vomit, and more stercoraceous fluid was withdrawn. The bowels were opened with some difficulty on the 13th; vomiting and slight abdominal pain occurred on this day and were at once controlled by $\frac{1}{12}$th grain doses of cocaine hydrochlorate given every four hours. Rectal feeding was employed for 48 hours, after which fluids were given by the mouth, and on the 15th fish diet was ordered. The wound healed slowly, the skin at first showing very little attempt at union. The patient got up on May 11th, was sent to the convalescent home on the 13th, and when seen last on July 16th was perfectly well.

The use of saline irrigation in abdominal operations has scarcely received the attention that it deserves. In many cases of acute obstruction, whether in children or adults, and in other conditions where the intestines are distended or otherwise involved, the method is of the greatest value. In each of the three cases described above the intestines were constantly irrigated with warm saline fluid by an assistant throughout the operation. Normal saline fluid at a temperature of 108° F. was used, for it is found to be absorbed more quickly than water and so to produce more rapid and marked effects. The saline fluid was *not* used in the place of more irritating antiseptic fluids to wash out the peritoneal cavity but with other objects. The following are the advantages claimed for the method.

1. *Distension of the intestines* is usually greatly diminished and this is a factor of utmost importance, both in regard to the direct effect upon the patient and the ease with which the necessary manipulations are carried out. During the course of the operation the exposed intestines are very liable to become dry and chilled, and then rapidly lose their power of absorbing the gases which are being produced, and so distension already existing is increased. A dry intestine must necessarily be a distended one, the two terms becoming synonymous. Saline irrigation will keep the intestines both warm and moist. It is by far the simplest and most effectual way of keeping the exposed parts warm, and with warmth evaporation proceeds more slowly and distension is correspondingly lessened. Moreover, the fluid is rapidly absorbed and the intestines are seen and felt to become heavier and collapsed; the tone of the bowel is recovered, the gases are again dissolved in the fluid, so that distension greatly diminishes or disappears. The heavier and undistended intestines readily sink back into the peritoneal cavity and this renders suture of the abdominal wall much easier, for distended intestines are not easily replaced without force and when dry their serous coat is easily lacerated. In these cases they have to be handled with the greatest care and few things are more embarrassing than the escape of distended coils from an abdomen in which it seems impossible to make room for their return. The improvement in the condition of the intestine following the use of saline irrigation will usually obviate these difficulties. It has been stated as an objection to this treatment that the abdomen often already contains more than it can readily hold and that in children especially there is frequently the greatest difficulty in keeping the intestines within the abdominal cavity and so the addition of fluid will only increase this difficulty. The objection is, however, based on theoretical rather than practical grounds, for it has been repeatedly seen that after free saline irrigation the intestines, distended at the commencement of the operation, collapse and become heavy; the actual bulk that has to be replaced is greatly lessened and they drop back into the abdominal cavity as soon as the edges of the wound are raised.

2. *Shock*, which always attends these operations, is diminished by the free absorption of saline fluid. The effect on the pulse and respiration very rapidly shows itself and there is the further advantage that several pints in this way may be more quickly introduced into the circulation than by other methods. The amount of fluid which can be left inside the peritoneal cavity is a variable quantity, depending largely on the condition of the intestines and the elasticity of the abdominal walls. If the distension be great and the abdominal walls elastic much of the fluid will escape during the closure of the wound, and probably only from half to one pint will remain inside; in a majority of cases, however, a much larger amount can be left behind. The essential point, however, is that large quantities of fluid are absorbed during the course of the operation if irrigation is carried on throughout.

3. *Thirst*, which is one of the most distressing features after abdominal operations, is undoubtedly diminished as a result of the free absorption of fluid. Innumerable factors, both general and local, enter into the pathology of thirst; of these the most important is relative tissue dryness following dilatation of the vessels in the splanchnic area and this can only be effectually relieved by adding fluid to the general circulation. Saline irrigation is the most convenient and most rapid way of effecting this object, and the results are much more satisfactory than those following the use of enemata of warm water or saline solution.

4. The influence of irrigation upon the *subsequent formation of adhesions* is an important point. The frequency with which these peritoneal adhesions give rise to chronic abdominal pain is well known and, further, several cases have been recorded in which a second attack of intestinal obstruction has occurred owing to adhesions in the neighbourhood of the original obstruction. Where there is a likelihood of peritoneal adhesions following the best way of minimising or preventing them is to leave as much fluid as possible in the peritoneal cavity. The intestines are thus rendered as it were more slippery and, moreover, smaller areas of peritoneal surfaces will be in contact with each other, owing to the presence of the fluid. The drier the peritoneal surfaces the more likely are they to adhere and to cause subsequent trouble. In certain cases, however, the formation of adhesions may be the best thing for the patient and then irrigation should be avoided. So, too, if there should be free oozing from adhesions or raw surfaces, irrigation will tend to maintain and to increase the bleeding.

5. Renal secretion is greatly increased and thus many of the toxic products circulating in the blood are eliminated through the kidneys.

The importance of systematically washing out the stomach in cases of intestinal obstruction can scarcely be overestimated, especially if there be severe stercoraceous vomiting. A large quantity of offensive material is thus usually got rid of. The stomach should be first washed out before operation with a soft stomach tube and a glass funnel, removing the fluid by syphon action until it is returned quite clear. Then at the end of the operation the process is repeated and it will usually be found that a large quantity of intestinal contents is again drawn off, which must otherwise have drifted back into the duodenum or have been vomited by the patient. The thorough removal of this foul poisonous material is an enormous advantage to the patient. The treatment is by no means completed by the operative relief of the actual obstruction. There are two factors which may lead to a fatal issue in spite of an apparently successful operation and these are the continued toxæmia and the mechanical effects of distension. The former of these is the most important; toxic products continue to be absorbed and the patient instinctively attempts to get rid of these by emptying his alimentary canal. Foul and decomposing matter continually pours into the stomach, leading to copious and incessant vomiting. The most efficient way of assisting the patient is by frequently washing out the stomach. There is the further advantage that the tendency to vomit during operation is minimised, a danger which is a very real one, death having frequently occurred in these cases owing to this accident.

Careful massage of the injured bowel was performed in two of the cases and produced most marked effects. The bowel was gently stroked downwards from the dilated to the collapsed portion, and although there had been excessive collapse below the constriction it was seen unmistakably to

regain power and to resume peristalsis. It is incidentally mentioned in Case 1 that the collapsed intestine was first traced downwards towards the cæcum and away from the obstruction. The greatest difficulty is often experienced in determining which is the upper end of a given coil of intestine; the best way of settling this is to run the finger along the mesentery, following a large vessel if possible, and finding to which side of the spinal column the finger is guided. In the dead subject this manœuvre is comparatively easy but mistakes are readily made during operations. Lastly, the use of cocaine hydrochlorate for the irritable vomiting, which often occurs during the first few days after operation, must be mentioned. It is given in doses of from 4th to $\frac{1}{8}$th of a grain in adults and from $\frac{1}{12}$th to $\frac{1}{16}$th of a grain in children and may be repeated every four hours if necessary. Experience of the drug in several cases has shown that it is effectual and gives the patient great relief.

Grosvenor-street, W.

A NOTE ON A CASE OF PUERPERAL SEPTICÆMIA TREATED BY ANTI-STREPTOCOCCIC SERUM.

BY JOHN M. MACKENZIE, L.R.C.P. & S. EDIN.,
AND
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ON Nov. 23th, 1902, one of us (J. M.) was called to see a primipara, aged 23 years, who was in labour. On arrival parturition was found to be so far advanced that the head was presenting between the labia. No manipulation was necessary beyond supporting the perineum. Half an hour later, at 4.20 A.M., a perfectly normal labour was completed. The placenta and membranes were expelled without difficulty and no lesion was found to exist in the parturient tract. In fact, with the single exception of the presence of a midwife, everything promised an early and favourable recovery. The midwife, as often happens, was in this case an element of danger, for she had, on her own confession, three times examined the puerpera per vaginam. Further inquiry elicited the fact that on the night of Nov. 23rd and morning of the 24th this same midwife nursed a patient who was suffering from numerous septic ulcers and who died from phthisis and lupus vulgaris. The room in which this patient died was exceedingly small and filthy and for many years there had never been any efforts in the way of cleanliness practised by those in charge of her. The puerpera was seen again at 12 noon on the day of the confinement and was found to be progressing favourably. At 4 P.M. on the 29th it was found that the patient had had a bad night with little or no sleep. She complained of severe pain in the back which had lasted for several hours. Her face was flushed and she was breathing laboriously and at the rate of 36 to the minute. The pulse was of very low tension and its rate was 136. The temperature was 102·4° F. The lochia were already offensive. The bowels had been moved naturally. The vagina and the lower part of the uterus were there and then douched with a solution of perchloride of mercury (1 in 2000). The patient was given a powder containing 10 grains each of sulphate of quinine and compound ipecacuanha powder. At 9 P.M. on the same evening the temperature had risen to 103·4°, the pulse was 140 and very feeble, and the respiration-rate was 40. Thus within 36 hours was found a state of things surely indicating the presence of acute septic poisoning and, as the earlier the onset the graver the prognosis, the worst was feared. On the 30th at 10 A.M. the temperature was 99·4° with a pulse-rate of 89. The patient had had 11 hours' sleep during the night. The severe pain in the back had disappeared and the general condition was improved. Believing that the improvement was temporary (the morning remission in such a case) the uterus was thoroughly and slowly douched with six pints of a solution of corrosive sublimate (1 in 2000), the process being an hour in completion. At 6.30 P.M. the temperature was 99 6°, the pulse-rate was 84, and the respiration rate was 30. The patient complained of some headache but otherwise the general condition appeared to be good. After consultation it was agreed to inject ten cubic centimetres of antistreptococcic serum between the scapulæ. To obviate the pain and to insure uterine contraction a hypodermic injection of hydrochloride of cocaine (a quarter of a grain) and citrate of ergotinin ($\frac{1}{10}$th of a grain) was given in the area selected two or three minutes before the serum was administered. On Dec. 1st at 11 A.M. the temperature was 99° and the pulse-rate was 84 and still of low tension, while the respiration was normal in rate. The uterus was again douched with six pints of a solution of perchloride of mercury (1 in 2000); the time taken in doing this was again an hour. At 5 P.M. the temperature had risen to 101°, the pulse was 112 in rate, dicrotic, and of low tension, and the respiration-rate was 32. Ten cubic centimetres of serum were again injected, preceded by a quarter of a grain of hydrochloride of cocaine. On the 2nd at 11 A.M. the temperature was 103 6°, the pulse was 130, and the respiration was 38. The patient had had a bad night, having had diarrhœa with frequent watery and bloody stools. She appeared exhausted and helpless, with a pinched look and a very marked tremor of both hands and feet. She complained for the first time of extreme tenderness in the hypogastrium. No meteorism was present. Her general condition was so unsatisfactory and the exhaustion produced by the diarrhœa was so extreme that we deemed it wise not to carry out any local treatment. The patient was given a powder containing a quarter of a grain of acetate of morphia with ten grains of carbonate of bismuth. The feeding was to consist simply of small quantities of boiled milk and lime-water. In view of the possibility of the diarrhœa being produced by the use of corrosive sublimate we resolved to discontinue it and to substitute douches of boiled water and tincture of iodine (one drachm to the pint). At 8.15 P.M. the temperature was 101°, the pulse was 112, and the respiration-rate was 24. The general condition had much improved since the morning. The uterus was douched with six pints of a solution of tincture of iodine (one drachm to the pint). A hypodermic injection of hydrochloride of cocaine (a quarter of a grain) and citrate of ergotinin ($\frac{1}{10}$th of a grain) was given, followed by ten cubic centimetres of serum. On the 3rd at 10 30 A.M. the temperature, the pulse, and the respiration were normal. The patient had had a good night with ten hours' sleep and her general condition was much improved. At 8 P.M. the temperature was 98 8°, the pulse-rate was 92, and the general condition of the patient was good. The vagina alone was douched and no serum was given. On the 4th at 11 A.M. the temperature was 96°, the pulse was 88, and the respirations were 18. At 8 P.M. the temperature was 100 2° and the pulse-rate was 96. The vagina was douched with three pints of 1 per cent. lysol. On the 5th at 10.30 A.M. the temperature, the pulse, and the respiration were normal. The patient expressed herself as being "well" and as "able to get up." After this date she made an uninterrupted recovery.

The sole reason for communicating this note is to record our estimate of the value of antistreptococcic serum. Taking the case in the light of its etiology and the remarkably early onset of septic symptoms we believe that the administration of anti-streptococcic serum played a beneficial part in its treatment. A few minutes after the injection of serum the pulse was noticed to improve in tone and tension and had a greater volume; probably the improvement in the pulse was aided by the ergotinin which was solely given to aid uterine contraction and so, if possible, to diminish the area for septic absorption. The administration of serum was adopted fairly early. Soon after each injection the temperature dropped, the pulse improved, and in two or three hours there was an improvement in the appearance of the patient with a corresponding sense of comfort and well-being. But it cannot be said that this improvement lasted for more than 13 or 14 hours. As in other cases in which we have used antistreptococcic serum the dose had to be repeated daily in order to keep up the favourable effects.

We are convinced that in a case of puerperal septicæmia serum alone should not be relied on; local treatment, particularly the douching of the uterus with one or other of the solutions in vogue, should never be neglected. It appears that if the absorption of septic material be allowed to continue unhindered, antistreptococcic serum of itself is not sufficient to control the symptoms, much less to insure recovery. In this case it has been found the helpful handmaid of other measures and, from previous experience of its use, we believe that it greatly militates against the exhaustion, the depression, and the liability to rigors which follow the douching of the uterus, however gently and skilfully done. The contrast that exists between the temporary improvement

produced by antistreptococcic serum in a puerperal case and the permanent improvement produced by antidiphtheritic serum in a case of diphtheria is very striking. Both give in a very short time a clinical picture of sudden return to health, improved aspect, improved pulse, temperature, and respiration, with a sense of well-being on the part of the patient, the one very evanescent, the other permanent. The serum used was obtained from the laboratories of Messrs. Burroughs, Wellcome, and Co.

Kirkby-in-Ashfield.

A CLINICAL COMPARISON OF THE MATERNAL PELVIS AND OF THE FŒTUS IN EUROPEANS, EURASIANS, AND BENGALIS:

AND THE ENUNCIATION OF A NEW LAW IN ACCORDANCE WITH WHICH THE SIZE OF THE CHILD AT BIRTH IS DETERMINED.

BY CLAYTON ARBUTHNOT LANE, M.D. LOND.,
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THE investigation here recorded was carried out at the Eden Hospital, Calcutta, during the latter part of the year 1901 and consisted in the weighing of children and the measuring of their heads at birth, and the measuring of their mothers' pelves about the tenth day after delivery. The children were all weighed on the same scales with the same weights and all the measurements were made with the same pair of callipers which was tested against an accurate tape measure. As regards the weighing and measuring of the children there is no need to make any comment thereon beyond remarking that in the case of the bimastoid diameter the points of the callipers were placed in the horizontal groove which is readily to be found running at the base of the mastoid process in all children at birth unless they are unusually large, and which even then may generally be found if carefully looked for. Turning to the pelvis, the intercristal diameter calls for no particular comment. The interspinous diameter was measured by pressing the two thumbs firmly outwards against the anterior superior spines of the ilia and in bringing the points of the callipers also against the thumbs.

It will be evident that this method of measuring the diameters of the false pelvis has the objection that it tends to exaggerate the difference between the intercristal and the interspinous diameters, because in the first measurement twice the thickness of the subcutaneous tissues and skin is added to the longer measurement, while in the second case the same amount is subtracted from the actual distance between the spines, so that the difference between the two is exaggerated by four times the thickness of the skin and subcutaneous tissues. At the same time this method gives much less variable results in the same case than can be obtained by marking on the skin the points which are judged to overlie the spines and measuring their distance apart, and it is on this account that it has been selected as being on the whole the most trustworthy. These measurements, then, as indicating actual distances, are not accurate, but if taken as comparative measurements this objection will not apply to them if a sufficient number of cases be taken, particularly if the women are of the same race and build. By far the most important clinical measurement of the pelvis is the antero-posterior diameter of the brim. The conjugate diameter may in most cases be readily measured as soon as the involution of the uterus has proceeded so far that the organ has sunk below the brim of the pelvis, at which time the involution of the abdominal wall is still incomplete and the hand can generally be made to sink in between the recti abdominis muscles, so that the tip of the middle finger is pressed strongly against the promontory of the sacrum, the patient lying on her back with her thighs flexed. The hand is then depressed till its radial edge comes into contact with the upper or anterior edge of the symphysis pubis, the point of contact being marked off by one of the nails of the other hand. The distance from this point to the tip of the middle finger is then measured off by callipers. If this manipulation is attempted too soon after delivery the presence of the uterus in the superior strait prevents its accomplishment, while if attempted too late the recti abdominis come together and make it difficult or impossible to reach the promontory.

Among the women measured were Europeans, Eurasians of varying degrees of colour saturation, Bengalis, Jewesses, Urias, and up country women, but the only classes measured in sufficient numbers to give figures of any comparative value were Europeans, Eurasians, and Bengalis. There will be found below a comparison between the pelves of Eurasians in whom the degree of colour saturation is slight and those in whom it is great, and the term "East Indian" will be used to indicate those in whom the dark blood predominates. But unless it is expressly so stated it is to be understood that the term "Eurasian" includes all those of mixed blood, whether fair or dark.

During the period under consideration there were born at the Eden Hospital 184 full-time Bengali children, having an average weight of 5·457 pounds. Of these 111, or 60·326 per cent., were males, having an average weight of 5·465 pounds, while 73, or 39·674 per cent., were females, having an average weight of 5·443 pounds. In the case of 53 Bengali children born prematurely, or of whom it could not be certainly said that they were full-term children, 29, or 52·83 per cent., were males and 24, or 47·17 per cent., were females. Of the total number of 237 Bengali children born during the period 140, or 59·072 per cent., were males and 97, or 40·928 per cent., were females. Of European and Eurasian children there were born during the same period 173 of both sexes with an average weight of 6·937 pounds. Of these, 53 were Europeans with an average weight of 7·312 pounds, that number being made up of 30 males, or 56·604 per cent., whose average weight was 7·625 pounds; and 23 females, or 43·396 per cent., whose average weight was 6·937 pounds; while 120 were Eurasians with an average weight of 6·75 pounds, 63, or 52·5 per cent., being males with an average weight of 6·875 pounds, and 57, or 47·5 per cent., being females with an average weight of 6·625 pounds.

Turning now to the pelvis the number to be dealt with is unfortunately much smaller. Since all children born at the Eden Hospital are weighed, the weights are available without special investigation. The systematic measurement of the pelvis was only begun about the middle of the year and the numbers are further lessened by the fact that a certain proportion of women left the hospital for one reason or another without submitting to further examination, and that in others it was not found possible when examining them ten days after delivery to reach the promontory through the abdominal wall. In the latter case the interspinous and intercristal diameters were measured, even though the length of the conjugate could not be ascertained. In Table I. are shown the pelvic measurements of adult

TABLE I.—*Showing the Measurements of the Pelvis in Bengali Females of 18 Years and over in whom it appeared to be Normal.*

No. of cases measured.	Length of the conjugate diameter in inches.	Average length of the interspinous diameter in inches.	Average length of the intercristal diameter in inches.	Percentage of interspinous to intercristal diameter.
6	3·5	8·156	9·785	83·352
14	3·75	7·797	9·402	82·929
20	4·0	7·925	9·665	81·997
14	4·25	7·684	9·464	81·192
7	4·5	7·946	10·179	78·063
13	Uncertain.	7·567	9·596	78·857

Total number of cases examined, 74; average length of the conjugate diameter, 4·008 inches; average length of the interspinous diameter, 7·818 inches; average length of the intercristal diameter, 9·607 inches; average percentage of the interspinous diameter to the intercristal diameter, 81·828.

Bengalis in whom, as far as could be ascertained, the shape of the pelvis was normal. It will be seen that the average conjugate diameter is 4·008 inches, the average interspinous diameter is 7·818 inches, and the average intercristal diameter is 9·607 inches; and, further, that the average intercristal and interspinous measurements bear no relation to the length of the conjugate diameter. The

last column, however, of this table is of considerable interest. It shows the percentage which the length of the average interspinous diameter bears to the average intercristal diameter (that is, the length of the interspinous diameter, if the length of the intercristal diameter is taken as 100), and it is remarkable that as the conjugate diameter increases this percentage becomes less—that is to say, that with increase in the conjugate diameter the tendency is for the iliac crests to bend more sharply inwards, while with a smaller conjugate diameter the bend is less abrupt, possibly in the latter case a retention of the infantile type. The regularity of decrease in this proportion, as the conjugate increases, shows that in spite of the smallness of the numbers concerned they may probably be taken as reliable and that they are likely to be confirmed when larger numbers of measurements are available. These numbers, however, are of no clinical value in any given case, for a glance at Tables II. and III. will show that, whatever the size of the conjugate diameter, the interspinous and intercristal diameters vary both actually and relatively within wide limits, so that they cannot be taken as indications of the former. During the period under consideration the pelves of 16 purely European women were measured, the average conjugate diameters being 4·411 inches, the interspinous diameters 8·24 inches, the intercristal diameters 10·367 inches, and the percentage of the interspinous to the intercristal 79·477.

TABLE II.—*Showing the Minimum, Maximum, and Average Lengths of the Interspinous and Intercristal Diameters for Varying Lengths of Conjugate Diameter in Bengalis.*

Length of the conjugate diameter in inches.	Number of women examined.	Length of the interspinous diameter in inches.			Length of the intercristal diameter in inches.		
		Minimum.	Maximum.	Average.	Minimum.	Maximum.	Average.
3·5	13	7·0	8·5	7·884	9·25	10·5	9·5
3·75	9	7·0	8·75	8·397	8·125	10·5	10·125
4·0	20	6·25	9·0	7·925	9·25	10·75	9·665
4·25	14	7·0	9·25	7·684	8·125	10·875	9·464
4·5	7	7·0	8·75	7·946	8·75	10·75	10·179

TABLE III.—*Showing the Maximum and Minimum Proportional Difference in Bengalis between the Interspinous and Intercristal Diameters for varying Lengths of the Conjugate Diameter. The Intercristal Diameter is taken as 100.*

Conjugate diameter in inches.	Minimum percentage of the interspinous to the intercristal diameter.	Maximum percentage of the interspinous to the intercristal diameter.
3·5	80·954	88·393
3·75	72·308	96·923
4·0	67·567	89·474
4·25	71·233	86·154
4·5	65·116	87·5

It is interesting to note the effect of the admixture of dark and white races on the pelvis. For purposes of registration it has been the custom at the Eden Hospital to divide the mixed race into two classes, the fairer being classed as "Eurasians" and the markedly dark as "East Indians." Of Eurasians the average conjugate diameter in 32 was 4·250 inches and the average interspinous and intercristal diameters in 37 were 8·092 and 10·152 respectively. Whereas in nine East Indians these diameters were 3·937, 7·472 and 9·662 inches respectively, the percentage of interspinous to intercristal diameter in the two classes being respectively 79·708 and 77·335. In Table IV. these facts are conveniently brought together. It will be seen that the tendency of the admixture of the native with the European is to diminish the pelvis of the latter in all its diameters. If one may take it for granted that the native element in these Eurasians is Bengali (which is by no means certain) then it appears that its admixture with the European tends to make the pelvis in its conjugate and interspinous diameters even smaller than the Bengali pelvis, but that the shape of the false pelvis so produced is not that of the Bengali pelvis.

TABLE IV.—*Showing the Average Clinical Measurements of the Pelvis in Europeans, Eurasians, East Indians, and Bengalis.*

—	Average conjugate diameter in inches.	Average interspinous diameter in inches.	Average intercristal diameter in inches.	Average percentage of the interspinous to the intercristal diameter, the latter being 100.
Europeans ...	4·41	8·24	10·367	79·477
Eurasians... ...	4·25	8·092	10·152	79·708
East Indians ...	3·937	7·472	9·662	77·335
Bengalis	4·008	7·818	9·607	81·328

Turning to the child's head, the measurements show regular gradations, the East Indian being smaller than the Eurasian and the Bengali being smaller than the East Indian head. The European heads measured were only 14 in number and the deductions therefrom are doubtful, but in the case of Eurasians (including East Indians) and Bengalis the numbers are 48 and 53 respectively and are sufficiently large to allow of safe deductions being drawn (*vide* Table V.).

TABLE V.—*Showing the Average Measurement in Inches of the Heads of Infants taken within 24 Hours of Birth.*

—	Biparietal diameter.	Bimastoid diameter.	Subocipito-bregmatic diameter.	Occipito-frontal diameter.	Maximum diameter.
At the Eden Hospital—					
Bengalis	3·332	2·843	3·592	4·207	4·861
Eurasians	3·540	3·050	3·723	4·369	5·047
Europeans...	3·667	3·075	3·741	4·461	5·238
In Paddington—					
Europeans...	3·528	3·162	3·766	4·169	5·142

The average measurements of 43 European children born in Paddington and measured by me when resident obstetric officer at St. Mary's Hospital, Paddington, are added. These latter were measured by a pelvimeter graduated in centimetres which was tested against an accurate tape measure and found to be correct and have been reduced to inches.

This investigation had not been carried on for long when it appeared that there was a relationship between the size of the pelvis as measured by its conjugate diameter and the size of the child which passes through it. In order to test the truth or otherwise of this idea the children were divided up into several series according to the size of the conjugate

TABLE VI.—*Showing the Average Weight of the Child born through Different Sizes of Conjugate Diameter.*

Size of the conjugate diameter in inches.	Europeans, Eurasians, and East Indians.		Bengalis.	
	Number of women measured.	Average weight of child in pounds.	Number of women measured.	Average weight of child in pounds.
3·5	2	6·125	6	5·25
3·75	4	5·5	12	4·95
4·0	14	6·875	23	5·49
4·25	13	6·961	16	5·8
4·5	8	7·398	5	6·1
4·75	7	7·428	0	—
5·0	2	8·062	0	—

Average conjugate of Europeans, Eurasians, and East Indians, 4·25 inches; average conjugate of Bengalis, 4·008 inches; average weight of a child of Europeans, Eurasians, and East Indians, 6·966 pounds; average weight of a Bengali child, 5·33 pounds.

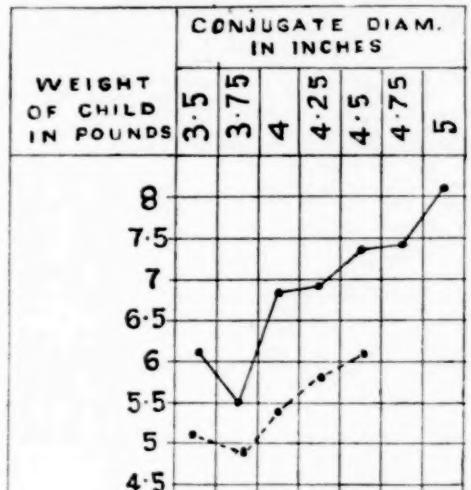
diameter through which they had passed and the average weight of each series was found. The Europeans and Eurasians (including East Indians) were massed in one table and Bengalis in the other, the numbers being too few to admit of any trustworthy result being obtained by considering the first three classes apart.

The results are shown in Table VI. and the diagram and they are most striking. Only those cases are included in this series in which the children were born at full term by mothers 18 years of age or over, who were in good health and whose pelves were not obviously deformed on vaginal examination. This has been the means of excluding young girls not yet fully matured; cases in which the sacrum was bent; in which the pelvic outlet was narrowed; and in which the mother was suffering from mitral stenosis, goitre, and chronic malaria. The intention has been to study if possible normal cases only, and to exclude all cases in which there was any obvious diseased condition of the mother likely to influence the nutrition and growth of the child, and therefore its size at term. Similarly if there is any hereditary law of relationship between the size of the normal pelvis and that of the child which is to pass through it (such a law would of necessity be a hereditary one, a transmission of the normal laws of growth which had affected the mother to the child borne by her) it will obviously not hold good if the mother's pelvis has after her birth been subjected to any abnormal conditions which will deform it and alter the relative lengths of its diameters.

The causes which influence the size of the child are variously given by different authors. They are sex,[1] males being heavier than females; the age of the mother,[2] though the age given as that at which the heaviest children are born varies considerably; the number of pregnancies[3]; the stature and bulk of the father[4] and mother[5]; or their constitution and health[6]; or, again, their advanced age,[7] the last causing overgrowth; and, lastly, prolongation of pregnancy producing overgrowth.[8] The consensus of opinion seems to be that sex is the most important influence determining the size of the child and after that the next most important the number of previous pregnancies. The size of the father and mother is considered generally to have some influence on the size of the child, but no one, so far as I have been able to discover, has ever stated that there is any relationship between the size of the mother's pelvis and the size of the child. It is, however, obvious from a glance at Table VI. and the diagram that speaking generally there is a very definite and marked relationship between the conjugate diameter of the normal pelvis and the size of the child which has to pass through it; and if in view of the care taken to exclude abnormally shaped pelves it may be granted that the size of the conjugate diameter is a measure of the size of these pelves generally, then it follows that there is a very definite relationship between the size of the pelvis and that of the child who is born through it. It will be remarked that this relationship is very definite and precise. Every step in increase in the conjugate diameter is accompanied by an increase in the average size of the child, with the single exception of the case of children born through the smallest pelves, those with a conjugate of 3·5 inches and under.

In face of the remarkable relationship between child and pelvis found with all larger diameters of the conjugate there appears no need to consider that this apparent exception, occurring as it does at the lower end of the scale and in both series, invalidates the general law. Rather it seems fair to consider that a pelvis with a conjugate of 3·5 inches cannot be considered as one produced by normal laws of growth; that it is not a hereditary condition the effect of which would be transmitted to the child, but an acquired peculiarity not capable of being so transmitted, an acquired condition due to interference with the natural laws of growth which are thereby stultified, so that the child whose rate of growth in utero is still determined by these laws is no longer of a size proportional to that of the mother's pelvis.

Now this definite relationship between the size of the mother's pelvis and the weight and size of the child is most remarkable and yet, as just stated, it has, so far as I am aware, hitherto passed unnoticed. Such a law has a very practical bearing, as was first pointed out by Lieutenant-Colonel F. S. Peck, I.M.S. When the impression that some such relationship existed began to strengthen in my mind, I mentioned to him the direction in which the measurements seemed to lead, and his comment was that in that case, so long as the pelvis was normal in shape on examination, mere smallness was no indication for interference with the ordinary course of pregnancy or labour. In view of the fact since brought out that in a pelvis the conjugate diameter of which measures 3·5 inches the child is not proportionately small, his conclusion requires, I think, modification so as to exclude pelves with a conjugate below 3·75 inches, but with



Europeans and Eurasians are shown by the continuous line and Bengalis by the dotted line.

[1] Galabin, Lusk, and Spiegelberg.
[2] Galabin, Duncan, Lusk, and Spiegelberg.
[3] Galabin, Lusk, Spiegelberg, Lehmann, and Hirst.
[4] Galabin, Hirst, and Spiegelberg.
[5] Galabin, Hirst, and Spiegelberg.
[6] Lusk and Spiegelberg. [7] Hirst. [8] Hirst.

TABLE VII.—*Showing the Average Length in Inches of the various Diameters of the Heads of Children born through Different Lengths of Maternal Conjugate.*

Length of conjugate diameter.	Number of women examined.	Length of biparietal diameter.	Length of bimastoid diameter.	Length of suboccipitobregmatic diameter.	Length of occipitofrontal diameter.	Length of maximum diameter.
			Bengalis.			
3·5	5	3·275	2·825	3·5	4·225	4·85
3·75	11	3·292	2·867	3·609	4·211	4·932
4·0	12	3·326	2·798	3·58	4·319	4·76
4·25	10	3·337	2·887	3·6	4·254	4·962
4·5	5	3·433	2·85	3·758	4·25	4·925
5·0	—	—	—	—	—	—
			Eurasians and East Indians.			
3·5	1	3·75	3·25	3·75	4·5	5·25
3·75	3	3·361	2·958	3·666	4·277	4·875
4·0	11	3·511	2·966	3·682	4·382	5·045
4·25	10	3·551	3·112	3·762	4·378	5·133
4·5	6	3·521	3·083	3·75	4·298	4·993
4·75	1	3·666	3·2	3·75	4·5	5·0
5·0	2	3·687	3·125	3·817	4·5	5·187
			Europeans.			
3·5	—	—	—	—	—	—
3·75	—	—	—	—	—	—
4·0	1	3·75	3·25	3·875	4·5	5·5
4·25	1	3·75	3·125	3·875	4·5	5·5
4·5	2	3·75	3·0	3·687	4·416	5·125
4·75	5	3·675	2·985	3·775	4·375	5·15
5·0	—	—	—	—	—	—

this exception there can be little doubt that it correctly lays down the principles of treatment in such cases.

Since it is the head of the child which is normally its widest part one would expect, in view of the facts already stated, to find a relationship between the size of the child's head and that of the pelvis of the mother. Table VII. is drawn up with a view to test this matter. Taking the numbers for Bengalis, which form probably the only series sufficiently large to give reliable results, it will be seen that no such thing occurs in the case of any diameter with the exception of the biparietal, although the suboccipito-bregmatic tends to increase with the size of the pelvis. Now the biparietal is the diameter which passes through the conjugate in normal labour,[1] so that the fact that there is a definite relationship between the length of the mother's conjugate and the child's biparietal diameters appears to be a strong confirmation of the law stated above. This conclusion is, however, open to objection and it might well be said that the parallelism is entirely due to the fact that the head is moulded during its passage through the pelvis in such a way that the biparietal is forced into conformation with the conjugate diameter. In attempting to determine this matter it becomes necessary to review some general considerations concerning the moulding of the child's head during delivery. Moulding may be either due to the influence of the hard or of the soft parts, an instance of the former being the dint or groove on the posterior parietal bone formed by a projecting promontory and of the latter the sloping forehead due to the pressure of the soft parts in a primipara. There is no doubt that in most cases moulding is largely due to the soft parts. One of the most striking cases in this series illustrative of this point is that of a Eurasian, a primipara, aged 30 years, in whom the head was retained on the perineum by the rigidity of the latter for about two hours. The conjugate diameter measured 4·5 inches; the child weighed only 5 pounds 8 ounces and the biparietal diameter measured 3·125 inches or 1·333 inches less than the conjugate. The pelvis was not deformed. In this case moulding was very pronounced and could only have been produced by the soft parts. Another illustrative case was that of a European, a 7 para, aged 25 years, in whom the second stage was completed in ten minutes. The conjugate diameter was 4·75 inches and the biparietal diameter was 3·5 inches, or a difference of 1·25 inches. There was much overlapping; the perineum was very lax. In both of these cases there can be no question that the marked moulding was produced by the soft parts only; in one case the perineum was rigid and the head was definitely moulded against it, while in the second case the moulding was due to the "reaction" on the child's head of the considerable force expended in the rapid dilatation of the soft parts. On the other hand, there was delivered a Eurasian, the biparietal diameter of whose child's head was 3·75 inches, while her conjugate diameter was estimated at 3·5 inches. Allowing a considerable margin for error there can be no doubt that in this case the head was compressed by the pelvis during labour and subsequently expanded before it was measured in the natural course of events.

Between those cases in which the pelvis undoubtedly affects the moulding of the child's head and those in which this is entirely due to the soft parts, there exists a regular series of cases, and it becomes very difficult to say at what point in the series the bony pelvis ceases to mould the child's head. The soft parts are stated to diminish the size of the diameters of the pelvis by an eighth of an inch unless the uterus forms part of them, in which case their thickness becomes much more. But it is probable from two considerations that in cases of obstructed labour the uterus does not have much influence in this respect. In the first place in these cases vaginal examination reveals the fact that, at least in the great majority of them, the uterus is soon drawn up out of the pelvis, and this is confirmed by the frequency of vesico-vaginal as compared with vesico-uterine fistulæ due to sloughing following prolonged pressure on the soft parts between the child's head and the mother's pelvis in prolonged labour. I do not recollect a single case of the latter in 18 months' practice at the Eden Hospital, whereas the former was not infrequently seen. On the other hand, in cases in which labour is not difficult the uterus frequently lies low in the pelvis, so much so that the anterior lip of the cervix may even lie below the bony outlet. In such cases it is difficult to say to what extent the pelvic wall, acting through the intervening uterus, compresses and moulds the child's head. Indeed, there is considerable reason for thinking that (the updrawing of the uterus being an automatic act proportional in extent to the resistance to be overcome) in a roomy pelvis the uterus will usually lie low, forming a packing, so to speak, round the child's head and preventing a precipitate labour by bringing the resistance of the bony pelvis to bear on the child's head. If this is so, then the resistance, and therefore the amount of moulding, will vary inversely with the facility with which the uterus can be drawn up out of the pelvis—that is, with the extensibility of the attachments of the uterus—and will not have any relation to the size of the pelvis in ordinary cases.

Allowing the validity of the arguments used, it may be conceded that in a small pelvis the moulding of the child's head is caused by the pelvis, and that, therefore, any proportion between the size of the child's head and that of the pelvis may be brought about by the actual passage of the former through the latter, but that in the case of a pelvis with ample room the amount of moulding is dependent on causes other than the size of the pelvis. This is confirmed by the fact that an increase of one inch in the size of the conjugate diameter of the pelvis is accompanied by an increase of about 0·2 inch in the biparietal diameter of the child.

The conclusion, then, is that, except in the case of small pelves, the parallelism between the size of the child's head (and in particular of the biparietal diameter) and the conjugate diameter of the mother's pelvis is the result of natural growth and is not a pressure phenomenon. The facts here recorded appear to point definitely to the conclusion that the weight of the child, and therefore the size, at birth bear a definite relationship to the size of the mother's pelvis and that this relationship is carried so far that the biparietal diameter of the child increases correspondingly with the conjugate diameter of the pelvis through which it will ordinarily pass at birth.

This may be summed up in the form of a law stated thus: "*The child grows in utero in such a manner and at such a rate that at full term his size is proportional to that of the mother's pelvis through which he has to pass in order to be born.*"

This hereditary influence appears to have a far greater share in determining the size of the child than any of the causes commonly recognised and mentioned in detail above. The mechanism by which this law is maintained is "natural selection" or the survival of the fittest. For as variations in the size of the child have arisen only those which have been beneficial will have been permitted to persist. In the case of a pelvis too small for the child the dangers threatening the life of the child and mother are well recognised. It is only necessary to mention mal-presentations including transverse position of the child and impacted fœtus with obstructed labour to realise the natural method by which unfavourable variations are ruthlessly crushed out by the death of the mother, or of the child, or of both. Attention does not seem to have been directed much towards the dangers of too large a pelvis, but so far as my experience goes they are real and lie in at least two directions. The first is that of precipitate labour with increased risk of lacerations and post-partum hæmorrhage; the second is that the uterus may become retroflexed after delivery while so large that there would not have been room for this to occur in an ordinary pelvis. The result is that the discharges are retained in the large cavity of the fundus and a late sapræmia sets in. This last is not, of course, the result of the pelvis being too large for the child, but simply the effect of its being too big for the puerperal uterus. It militates against a big pelvis, but does not necessarily keep the pelvis and the child of proportional size. The dangers of too large a pelvis are not nearly so great as those of one which is too small; yet even the former variation will produce conditions less favourable to the mother and tending towards her death or sterility, so that the chances of her bearing further children are lessened, while in the latter case the propagation of the race is rendered very difficult by the frequency with which the deaths of mother and child follow. Those varieties, then, in which the child bears a proper relationship in size to that of his mother's pelvis are those which are the most beneficial

[1] This is not quite correct, for the diameter which passes through the conjugate runs from a point somewhere in front of one parietal eminence to another point somewhere behind the other, but this diameter lies so close to the biparietal that for practical purposes it may be taken that the one is the measure of the other, the two being of proportional size.

and these are they which have had most chances of survival in the struggle for existence, so that this hereditary parallelism has been established in course of generations and is now handed down from mother to child.

It is to be noted that the application of this law of proportion receives a tacit acknowledgment in the case of the progeny of different species. It is its applicability to individuals which is new.

Puri, Orissa, India.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF POISONING BY A BELLADONNA SUPPOSITORY.

BY J. C. MCWALTER, M.D. BRUX., L.R.C.S. IREL., D.P.H. R.C.P.S. IREL.

PATIENTS, I notice, are prone to think that all suppositories must be pretty much the same and that they are all alike used for an aperient effect. I had prescribed on several occasions small glycerine suppositories for an infant, aged four months, and belladonna suppositories for her mother who suffered from hæmorrhoids. One night the mother desired to administer a suppository to the child, and as she had none of the glycerine ones and being of an economical turn of mind she decided on utilising one of the belladona suppositories of which she had several. As a result I was sent for about an hour afterwards, the mother stating that she feared the child was dead. The infant lay in an immovable dorsal posture with the eyes widely dilated; the skin was dry, the tongue was almost immobile, the breathing was nearly imperceptible, and all the usual classical symptoms of belladonna poisoning were present, although the mother declared that not more than half a suppository had been given.

The interesting features of the case were the inability of the child to cry, the peculiar rigidity of the aspect, the pinkish flush of the face, and the extremely superficial character of the breathing, whilst the heart sounds appeared strong and slow. The infant recovered after treatment with hot baths, mustard blister, stimulants, and minute doses of paregoric.

Dublin.

A CASE OF DOUBLE AMPUTATION.

BY E. CLAUDE TAYLOR, M.S., M.D. LOND., F.R.C.S. ENG.,
VISITING MEDICAL OFFICER TO THE HAMPSTEAD WORKHOUSE INFIRMARY.

A WOMAN, aged 77 years, was admitted to the Hampstead Workhouse Infirmary on Jan. 2nd, 1903, suffering from senile gangrene of both legs, which had been going on for about five months. The destructive process had laid bare all the muscles and tendons about the calves and ankles and even exposed the bone. The stench was so dreadful that the porter who admitted the case became violently sick. The poor old woman had practically not slept for weeks because of the pain. As soon as arrangements were ready Mr. W. A. Mallam administered A.C.E. mixture and I amputated both limbs through the lower third of the thighs by the circular method. The arteries were stiff with calcareous matter and only the main vessels required tying. The patient was on the table about 40 minutes. She passed the night in sleep; her temperature never rose. Both stumps healed almost throughout by first intention and she is still alive and happy. A special nurse gave great care to feeding her during the first few days and to dressing the stumps with boric fomentations to insure a better circulation. I may briefly mention two other recent cases of amputation through the thigh for senile gangrene in very old women. One, that of a woman, aged 95 years, was admitted to the infirmary on Dec. 2nd, 1902, with commencing gangrene of the foot, severe pain, and pyrexia. She did excellently after the operation, the temperature never rose, she ate a hearty Christmas dinner when the time came, and was finally transferred to her own parish in Whitechapel. The other, that of a woman, aged 82 years, was admitted with defective circulation in the legs which, in spite of all our efforts, culminated, in the left foot, in gangrene. She was emaciated and in great distress because of the pain and fever, but consented to the amputation, which was performed on April 16th, 1903, and which made quite another woman of her. The wound healed excellently, the only trouble being that the vitality of the extreme edges was defective. The temperature never rose above 99·2° F. However, the stump was all sound on May 7th when the patient was apparently seized with cerebral thrombosis and died comatose in a few hours. In 1898, at the same infirmary, I amputated through the thigh in a woman, aged 88 years, bed-ridden, and with joints ankylosed by chronic arthritis. She did well and lived to be 90 years of age. In none of these four cases did I give any alcohol. I am inclined to think that amputation cases do better when alcohol is not administered. Perhaps I may refer to a case of triple amputation, which was my first case of amputation, when I assisted the surgeon of a hospital and another house surgeon and we each simultaneously removed a limb in a young man for gangrene due to frost-bite. He recovered. In his case alcohol was lavishly administered and suppuration freely took place.

Roslyn-hill, Hampstead.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

LEEDS GENERAL INFIRMARY.

A CASE OF STRANGULATED HERNIA ASSOCIATED WITH ACUTE HÆMORRHAGIC PANCREATITIS.

(Under the care of Mr. W. H. BROWN.)

FOR the following notes we are indebted to Dr. Sydney Platts, house surgeon.

The patient, a man aged 60 years, was admitted to the Leeds General Infirmary on August 2nd, 1903. He had had no illness of any kind up to the day before admission when he was seized with sudden pain in the lower part of the abdomen—i.e., between the umbilicus and the pubes; the pain was intense and he vomited two or three times during the night; he had no action of the bowels nor did any flatus pass. On admission the abdomen was generally distended and very tender; the pulse was 100 and rising, and the respirations were 34. The scrotum contained a large double hydrocele and in addition on the right side was an irreducible inguinal hernia the examination of which produced great pain. Shortly after admission the patient vomited about eight ounces of fluid, dark brown in colour and distinctly fæcal in odour. Under ether the hernial sac was opened and was found to contain a loop of small intestine, deeply congested but not gangrenous. The bowel was easily returned and the ring was closed with silk sutures. The patient lived for 24 hours; the vomiting recurred at intervals, the vomited material becoming darker, and just before death it contained altered blood. On post-mortem examination the following conditions were found. The scrotum contained a double hydrocele. On the right side was an old hernial sac which was empty; the inguinal canal was closed by silk suture. The lungs were much congested and the heart was normal. As regards the pancreas the head was very dark in colour and very friable; on the upper surface was a greyish slough of about the size of a walnut. The lesser peritoneal sac was filled with a thick curdy fluid resembling pus; the foramen of Winslow was closed. There were numerous patches of fat necrosis scattered over the omentum and the mesentery, the gall-bladder was full of small calculi, and the spleen substance was very soft.

Remarks by Mr. BROWN.—I observed at the time of operation that the patient seemed to be far more ill than was accounted for by his physical signs, unless, indeed, we found the bowel to be gangrenous. This not being the case I was convinced that some intraperitoneal catastrophe had taken place, the nature of which I could not surmise, and the patient's condition did not warrant any exploratory incision. With the cause of death as revealed by the necropsy I do not see that draining the lesser sac could have been of any avail in this case as fat necroses were present scattered over a very wide area. Whilst it may be possible to diagnose pancreatitis in a given case watched for days it does not seem reasonable even to suggest its presence in such an acute attack as the one just related, more especially when associated with an irreducible hernia. That it is possible for a fatal inflammation of the pancreas to run its course in 48 hours without previous warning of any kind is a somewhat disquieting fact. To have such an attack ushered in with the all too familiar "sudden pain in the body and vomiting" as the sole guide is unsatisfactory. We know that scores of cases begin in this way and clear up without further trouble; then comes one, like the present, which begins and ends fatally before time has permitted a diagnosis to be made. The pancreas pathological, to judge from the present case, is as malignant in its attack as the vermiform appendix.

GOVERNMENT CIVIL HOSPITAL, HONG-KONG.

A CASE OF RUPTURED SPLEEN; OPERATION; RECOVERY.

(Under the care of Mr. J. BELL.)

A CHINESE male adult was admitted to the Government Civil Hospital, Hong-Kong, on April 30th, 1903, having been knocked about in a fight. His pulse was small and thready and he complained of great pain all over the abdomen. There was dulness in both flanks. His dying depositions were taken as quickly as possible and the operation was rapidly performed. The abdominal cavity was full of blood and the spleen was ruptured on the inner surface. The pedicle was ligatured and the spleen was removed. No attempt was made to clear out the blood but the intestines were moved to one side and a pint of saline fluid was poured into both flanks and the incision was closed. The patient was much collapsed and for the next few hours was kept going with rectal injections of saline solution and hypodermic injections of strychnine and camphor. The wound healed well but on the sixth day the temperature rose to 101·2° F.; a blood slide, however, showed crescents and malignant parasites and on the administration of quinine it subsided in 24 hours. He was discharged well on May 28th.

Remarks by Mr. BELL.—The spleen was about two and a half times the normal size. According to the separate statements of the patient and the witnesses the accident occurred 28 hours previously to admission, but evidently if this were so only the capsule was torn and the further tear of spleen tissue occurred later. This is an operation in which everything must be sacrificed to speed. The rise of temperature due to malaria was interesting. I am much indebted to Sister Dewar and Sister Gorham who, in the unavoidable absence of the medical officers at the first part of the operation, rendered most valuable aid.

Reviews and Notices of Books.

Natural and Artificial Sewage Treatment. By Lieutenant-Colonel ALFRED S. JONES, V.C., Assoc. M. Inst. C.E., Fellow and Member of Council of the Sanitary Institute, &c.; and H. ALFRED ROECHLING, M. Inst. C.E., Fellow of the Sanitary Institute, &c. London: E. and F. N. Spon, Limited. New York: Spon and Chamberlain. 1902. Pp. 96.

THE first part of this book, which is written by Lieutenant-Colonel A. S. Jones, V.C., is quite a valuable contribution to sanitary science and its publication is most opportune. By far the most instructive part of the work is that on the Camp Farm, Aldershot. The history of this sewage farm, which is, as far as we know, now given for the first time by Colonel Jones, is briefly as follows. When the camp was first formed (soon after the Crimea war) a civilian, James Blackburn, was employed by the War Office to deal with the sewage which was conducted to a sandy area of about 100 acres. The arrangements made were so good that no nuisance was caused and by the year 1879 the rye grass grown on previously barren soil was of considerable value. The produce was sold to a keeper of cows who made an offer to the War Office to take the farm on lease. At the expiration of 15 years from this time a different state of things existed. The drains had in the meantime been neglected and some of the sewage had been conducted beyond the Government area where it caused such a nuisance that Dr. E. C. Seaton, medical officer of health of Surrey, and ultimately the Thames Conservancy Board attacked the War Office in the matter. Colonel Jones was called upon by Mr. (now Sir) Henry Campbell-Bannerman to report on the question, and ultimately he undertook the duty of supervising the farm and the result may be given in the words of Sir Redvers Buller who, it may be said, is no mean authority on matters agricultural and who was well aquainted with the Aldershot sewage farm. In a letter to Colonel Jones he bears witness to the fact that under his management "putrid sewage bogs have been turned into fertile fields," and he infers, and rightly infers, that the forces of nature can effect the work of sewage purification "without the assistance of expensive patents or artificial devices." This is the experience of an observant unscientific layman. What these "forces of nature" may be is perhaps not within his knowledge. An investigation of their nature and of their work has for years occupied the attention of some of the medical officers of the Local Government Board. On the other hand, as Colonel Jones points out, engineers, chemists, bacteriologists, and inventors of systems have in the interests of their trades raised clouds of dust through which it is difficult for ratepayers and district councillors to find their way to the best practical and available means of sewage disposal. This little book should be studied by all members of sanitary authorities who will find a great deal of practical instruction not only in the contributions of Colonel Jones but also in Mr. H. A. Roechling's chapter on Natural and Artificial Sewage Treatment.

A System of Practical Therapeutics. Edited by HOBART AMORY HARE, M.D. Second edition, in three volumes (Vol. I., pp. 856; Vol. II., pp. 926; Vol. III., pp. 841.) London: Williams and Norgate. 1902. Price £3 3*s.*

THIS is the second edition of a system of treatment published some years ago. The work has now been thoroughly revised and largely rewritten, so as to be completely abreast with the latest advances in medical therapeutics. Among its contributors are some of the best British as well as American medical authorities, and every endeavour has been made to adapt it to the needs of the profession in this country as well as in America. Thus in the articles on Climate and Mineral Waters due reference is made to the various European health resorts and mineral springs as well as to those of the American continent. It is impossible to deal with such a large work in any detail, but reference may be made to a few of the articles which appear to be of special interest or importance.

The first volume is largely devoted to articles on general therapeutic measures, such as Sanitation, Nutrition and Foods, Exercise, the Rest Cure, Electro-therapeutics, Hydrotherapy, Climate, Mineral Waters, Massage and Swedish Movements, and Disinfection. All these articles form interesting reading. They are thoroughly sound in the principles enunciated and they abound in details of great practical utility. The treatment of the most important diseases is to

be found in the second volume. The article on Typhoid Fever is written by the editor, Dr. H. A. Hare, and is very suggestive and instructive. He deals with the question of hydrotherapy at great length. While a staunch adherent of the hydropathic treatment in some form, he points out that statistics do not indicate such a reduction in mortality by the Brand treatment as is maintained in some quarters. Taking the ordinary average mortality of typhoid fever as about 15 per cent., it has been claimed for the cold bath that it is able to reduce this to 7 or 8 per cent., but Dr. Hare shows that good nursing and careful treatment are accountable for a reduction to 10 per cent., leaving a balance of only about 2·5 per cent. to the credit of hydrotherapy. Statistics show, further, that under the cold bath treatment the attack is probably prolonged, relapses and hæmorrhages are more frequent, cases of albuminuria are increased, and the frequency of perforation is not reduced. Dr. Hare strongly deprecates the universal employment of the cold bath and prefers sponging or rubbing with ice.

The article on Rheumatic Fever is contributed by Dr. F. A. Packard and that on Diseases of the Heart by Dr. W. H. Thomson, and it is interesting to note that they are entirely at variance in their opinions as to the efficacy of alkalies and salicylates in acute rheumatism and the influence of these drugs on cardiac complications. Dr. Packard takes the view that the treatment with alkalies, based as it was on a wrong hypothesis, has proved of no more utility than the exhibition of mint water or any other equally harmless drug; on the other hand, he believes in the almost specific effect of salicylates on the course of the disease, tending not only to diminish the duration and intensity of the disease but also to hinder cardiac complications. Dr. Thomson, on the contrary, does not credit salicylates with the power to do more than to reduce the arthritis but holds them responsible for an increase in endocardial and pericardial affections. In regard to alkalies he says: "That a full, and not a partial, recourse to alkalies will render carditis in any form uncommon in all patients, except children, with acute rheumatism I believe as implicitly as Fuller himself." In dealing with the treatment of pericarditis he says: "In rheumatic cases the alkaline treatment should be persevered with but all salicylates stopped."

The third volume is chiefly surgical and is devoted to such surgical treatment as comes within the province of the general practitioner. A very good article is contributed by Dr. G. F. Fowler on Appendicitis in which the much-vexed question of operative interference is carefully and fully discussed.

Although it cannot be said that all the articles are of equal value these three volumes contain a large amount of valuable information and sound advice and should prove of considerable service as a practical work of reference for the general practitioner.

Doença do Somno. Trabalhos executados até 6 de Agosto de 1902 pela Missão enviada a Angola pelo Exmo Ministro da Marinha, composta de ANNIBAL BETTENCOURT, Chefe da Missão, AYRES KOPKE, JOSÉ GOMES DE REZENDE, junior, ANNIBAL CORREIA MENDES. Separata da *Revista Portugueza de Medicina e Cirurgia Praticas.* (*Sleeping Sickness.* Work done up to August 6th, 1902, by the Commission sent to Angola by the Minister of Marine, composed of ANNIBAL BETTENCOURT, Chairman of the Commission, AYRES KOPKE, JOSE GOMES DE REZENDE, jun., and ANNIBAL CORREIA MENDES. Reprinted from the *Revista Portugueza de Medicina e Cirurgia Praticas.*) Lisboa: Officina Typographica, 7, Calcoda do Cabraz. 1902. Pp. 138 + 6 plates.

THIS is an enlarged edition of the report of the Portuguese Commission on Sleeping Sickness which was noticed at some length in THE LANCET of Sept. 27th, 1902, p. 885. In this report an account is given of 70 cases of sleeping sickness examined by the commission, in 52 of which cases necropsies were made. At the end of the report are a good map of the province of Angola and 30 admirable photographs of microscopic appearances seen in the brain and cerebro-spinal fluid of these cases. The commission came to the conclusion that warm damp localities with abundant vegetation are most suitable for the habitat of this disease and that the duration of the disease is from three to 26 months. The members of the commission believe that sleeping sickness is contagious, and they were supported in this belief by the history of 15 of the cases seen by them; they state that when this disease attacks one member of a family it is common for the whole family to die from the malady. It is most interesting to note that these Portuguese investigators, whose skill with the microscope is evident from the excellence of their microscopic plates and who made frequent examinations of the cerebro-spinal fluid both during life and after death, did not in any one case find the trypanosoma described by Dr. A. Castellani which was found so often by Lieutenant-Colonel D. Bruce, R.A.M.C. It is true that this report was published before Dr. Castellani's paper appeared in THE LANCET, so that the attention of the Portuguese investigators had not been directed to the existence of this trypanosoma. In an annotation which appeared in our columns (Sept. 12th, p. 769) it was shown how few in number the trypanosomes were in some of the cases; it would therefore be a matter of great interest if these investigators would examine further patients to ascertain the presence or absence of these organisms in the cerebro-spinal fluid. A possible explanation is that this trypanosoma, like the filaria perstans which Sir Patrick Manson found in his cases and which the Portuguese commission found in only two out of 45 cases specially examined for filaria, is only found locally in cases of sleeping sickness, especially as trypasoma fever is unlike sleeping sickness clinically. The Portuguese Commissioners insist that the diplo-streptococcus, as they term the micro-organism which they found in the brain and cerebro-spinal fluid, is the true cause of the disease, whereas Dr. Castellani considers the concomitant streptococcus inflammation to be secondary to the trypanosoma. They maintain that their streptococcus is a distinct variety, and Dr. Castellani has also observed in these cases a streptococcus which he holds to be a distinct variety between the streptococcus pyogenes and the streptococcus lanceolatus (Fränkel's streptococcus). As to treatment, the Portuguese observers tried mercury in different ways, salicylate of sodium, quinine, arsenic (chiefly arseniate of sodium), iodide of potassium, extract of male fern, antipyrin, dedaleira, caffeine, sparteine, ergotin, camphor, benzonaphthol, salicylate of bismuth, tannin, and laudanum without any satisfactory result. They think that experiments which they made on rabbits justify them in supposing that some prophylactic injection may be discovered eventually. In the meantime they can only recommend isolation of the patient and disinfection of his lodgings, and that the negroes should be compelled to take their meals separately and should not be overworked.

Protozoa and Disease. By J. JACKSON CLARKE, M.B. Lond., F.R.C.S. Eng. Part I. London: Baillière, Tindall, and Cox. 1903. Demy 8vo, pp. 177 + xx. With 91 illustrations. Price 7*s.* 6*d.*

THE appearance of Mr. Jackson Clarke's little monograph upon the pathogenetic protozoa is most opportune at the present moment when the interesting and important observations of Bruce and Castellani on the sleeping sickness of Central Africa are directing special attention to one group of these but little known parasites. That the protozoa should be but little known to the general reader is in no way

surprising, for it is only within quite recent years that the importance, actual and potential, of these animal organisms to practical medicine has been realised; and, moreover, beyond the meagre descriptions of the amœba dysenteriæ and the sporozoa of malarial fevers which appear with unfailing regularity in present-day text-books of medicine, the student who is interested in the subject has hitherto had to turn from English literature and carefully to search the pages of French and German scientific journals. The first volume of Delage and Herouard's "Zoologie Concrète," it is true, gives a most lucid account of the protozoa as a class, but this work is not easily accessible to all—then, too, it was published in 1896 and much valuable material bearing on the life-history of the pathogenetic species has accumulated during the seven years that have elapsed since its appearance.

Mr. Jackson Clarke's book, therefore, is especially welcome to the readers for whom it is intended—the student, the busy physician, and the pathologist—although it must in no sense be regarded as a text-book for the biologist devoting himself to this branch of the animal kingdom. The selection of material for treatment has been most judicious, the general scheme of the book is clear and comprehensive, and the language itself is simple and impressive. The first chapter, taking as its text a few simple and easily understood types, clearly describes the composition of the cell and the general characteristics of unicellular organisms. The next seven sections deal systematically with the various groups of the protozoa, of which the sarcodina, sporozoa, coccidia, and flagellata will probably attract the largest share of attention from the medical reader. The protozoa of, to the human pathologist, less importance—e.g., the gregarinida, nesosporidia, and ciliata—are also adequately described both morphologically and from the point of view of the comparative pathologist. The accounts of the structure and life-histories of these organisms, though sufficiently clear and graphic in themselves, gain considerably from the lavish way in which they are illustrated. Some of the illustrations, it is true, are somewhat familiar, whilst others are obviously adaptations, but most of them are new to us and, although often schematic and diagrammatic and possessing but little artistic beauty, convey the author's meaning most forcibly; indeed, we are prepared to prophesy that some at least will be reproduced in the form of wall diagrams and employed for class demonstrations and teaching purposes generally. Another point, too, which materially increases the value of the book to such of its readers as may wish to dip more deeply into the subjects of which it treats is the inclusion, in the form of footnotes, of full references to the original papers from which the author has derived some assistance, either in the form of facts or theories.

Chapter IX., in the all too short space of three pages, opens up the interesting subject of the diseases of the protozoa themselves. This is followed by a chapter on methods, which is perhaps less complete than any of the others. We miss many old and well-tried methods, nor does the author mention Elmassian's staining process as specially applied to the trypanosomes, or the familiar Romanowsky's method as modified by Leishman for more general use. The work concludes with a short note of a somewhat controversial character on the microgamete phase in the life-history of the coccidium oviforme.

In conclusion, we wish the book every success and shall look forward with interest to the second part which will deal with the rôle alleged, but not as yet fully proved, to be played by protozoa in such diseases as syphilis and the exanthems.

LIBRARY TABLE.

The New but True Life of the Carpenter, including a New Sketch of Mahomet. By AMOS. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. 1903. Pp. 336. Price 4*s.* 6*d* net.—The author calls his book an "unpretending volume." It is rather "effectively," or to be candid loudly, got up with a gold cross, a red crescent, and five golden stars on the cover. The book professes to be a "humble protest" against the dire progress of rationalism. However humble the author may consider himself it appears to us to partake rather of the nature of boldness to rewrite and to "improve upon" the story of the Gospel in the language of the modern interviewer—as, for example: "Have you heard the news?" "What news?" "Why, that priest Zacharias," &c.; or, again, following the Benedictus: "I copied it out, a glorious prophecy; hundreds of copies are being circulated. Expectation is at its height," and so forth.

Index Médical des Principales Stations Thermales et Climatiques de France. Paris: Gainche. 1903. Pp. 398.—A very useful little book on the health resorts and spas of France has lately been published. It is intended for the use of medical men and is produced under the auspices of the Syndicat Général des Médecins des Stations Balnéaires et Sanitaires de France. In the short introduction which precedes the index attention is naturally called to the wealth of France in regard to mineral waters which have, in fact, been much neglected in favour of those of Germany. The book itself is a short one, occupying less than 300 pages, yet it is very complete. The information given is concise and useful; it comprises usually a brief history of the spa, the physical and chemical characteristics of the water, the method in which it is used, and its action or reputed physiological action on nutrition, digestion, respiration, the circulation of the blood, the nervous system, and the skin. The therapeutical indications and contra-indications for its use are then mentioned. A very useful feature in the work is the description which is given in each case of the chief points of interest in the town or village in which the spa is situated. For example, to take a case at hazard, La Bourboule, we are told, is in the canton of Rochefort and contains 1200 inhabitants; its distance from Paris is given together with the route and the cost of the railway fare and the time occupied by the journey. The number of postal deliveries is stated and also the fact that there are telegraph and telephone stations. The altitude of the town and the orientation of the valley are mentioned. There is a brief note on the climate and the traveller is candidly warned to provide himself with warm as well as with light clothing. There is also an account of the geology of the place. The hotel prices are indicated and the possible amusements are enumerated. Finally, there is the statement that the bathing establishments are of three classes, the treatment being the same in each case, and there is a list of the medical men. From what has been said it will be seen that the "Index" gives exactly the kind of information which is likely to be useful and which, so far as we are aware, cannot be found elsewhere in any single book, including the "Encyclopædia Britannica." The guide has the advantages that it is not in any way a puff, that it is without illustrations such as sometimes tend to deceive, and that it contains a good map in which are clearly marked all the places mentioned in the book.

SEWAGE DISPOSAL AT BUDLEIGH SALTERTON.—At the meeting of the Budleigh Salterton (Devon) urban district council held on Sept. 16th letters were read from two visitors making strong complaints as to the presence of crude sewage along the beach and of the great annoyance caused in consequence to the visitors and others who desired to bathe. A Local Government Board inquiry had already been held on the subject of the drainage and the council was in daily expectation of receiving the inspector's report.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 26, 1903.

Typhoid Fever in Armies.

WE published last week a leading article upon the occurrence of typhoid fever in armies which was mainly devoted to the consideration of Dr. H. E. LEIGH CANNEY'S well-known scheme for securing a pure water-supply. While we deprecated in that article taking Dr. CANNEY'S scheme as an all-sufficient method of combating typhoid fever in armies we need hardly say that we regard the cutting off of the sources of infection which may lurk in drinking water as a fundamentally important item in every plan for the prevention of typhoid fever. The arguments for Dr. CANNEY'S scheme will be found set out by himself in our columns,[1] while a letter which we publish from him this week defines exactly his position in the matter. Dr. CANNEY'S scheme has been subjected to considerable criticism, some officers of experience being of opinion that it is not feasible and others considering it worthy of trial. These latter are on the safer side for, of course, it is impossible to say without chance of contradiction that anything is impossible until it has been tried. For our part we do not wish to be taken as meaning to imply that the authorities at the War Office would be wasting their time if they were to give Dr. CANNEY'S scheme a trial. Any organised method that might obviate such terrible disasters as those which recently fell upon our army through fault of water-supply ought to receive a fair trial; but we hope that it will be made very clear indeed to the public that a scheme of water-carriage could only remove one source of danger and not all sources of danger from the army.

It may be said that the danger of a faulty water-supply is out of all proportion greater to an army in respect of typhoid fever than any other danger can possibly be, but this is not proved. Certainly the tendency to disregard all other possible causes of the spread of typhoid fever in armies is due to an ill-judged comparison of the camp with the urban district. A large mass of evidence as to the cause and spread of typhoid fever in armies has recently been published by the Government of the United States of America in a report on the epidemics which devastated the volunteer camps of the United States army in 1898. This report, which embodied the findings of a commission specially appointed for the purpose, expressed the opinion that in many epidemics infected water was not an important factor in the spread of typhoid fever and that there was much to indicate the effect of direct personal infection, as well as of infection through soil, clothing, bedding, and tents. The facts of the various epidemics were exhaustively inquired into and were very lucidly set forth by the Commissioners, and in the face of such evidence it is quite clear that to recommend any method of sterilising water as a panacea for typhoid fever in the army is wrong. We are not saying that Dr. CANNEY has taken this line, but less informed members of the public are prepared to do so, with the chances of grave disappointment. The work that was done at Netley by Lieutenant-Colonel R. H. FIRTH and Major W. H. HORROCKS showed once and for all the fallacy of attributing the spread of typhoid fever in armies to an infected water-supply alone. Dr. CANNEY'S method of supplying a sterilised water to the army in the field, if it be practicable, should certainly play a part in any comprehensive scheme, but it can only play a part. What is required is a carefully worked out strategical plan directed to the prevention of typhoid fever in the army both in war and in peace. Such a plan should be the medical counterpart of those strategical plans which it is the recognised office of a general staff to elaborate in view of military eventualities. Into an adequate plan for the reduction of the incidence and death-rate from typhoid fever in the army there would enter provision for securing the purity of the water-supply so far as the military exigencies of a campaign admit. There would enter also provision for the sterilisation or immediate and effective removal, again so far as the circumstances of war admit of this being done, of infected excreta. There would enter, further, provision for the suitable choice and for the sanitary upkeep of standing camps. Lastly, there would enter the re-introduction into the army of the processes of anti-typhoid inoculation. For it will have been noted in our report in THE LANCET of August 8th, p. 420, of the proceedings of the Royal College of Physicians of London on July 30th, that the efficacy of anti-typhoid inoculation has been vindicated by the judgment pronounced by a committee of inquiry appointed by the College in response to a reference emanating from the Secretary of State for War. The report was to the effect that not only was a lessened susceptibility to the disease brought about as a result of the inoculation, but that the case-mortality was largely reduced. We shall publish shortly two further sets of statistics dealing with anti-typhoid inoculation, the evidence of which is satisfactory.

The need for the adoption of a well-considered plan of campaign against typhoid fever in the army carries with it, in our view, a need for the creation of a committee of sanitary experts for the purpose of working out such a plan. More than a year ago we wrote that the whole subject required to be threshed out thoroughly by the Army Medical Advisory Board or by some committee specially appointed for the purpose; and the evidence recently given before the Royal Commission of Inquiry into the Preparations for the South African War makes us certain that a carefully constituted committee is required. The Advisory Board, as at present composed, is incapable of undertaking or superintending the bacteriological work, to say nothing of the tests in the field at home and abroad, which would be required in order to decide on the comparative merits of the various details of an anti typhoid crusade. A medical officer thoroughly skilled in hygiene has a seat on this board, but he cannot be expected to sway the counsels of the board. If the

[1] THE LANCET, Dec. 27th, 1902, p. 1742.

country is in earnest in its desire to prevent the possibility of a recurrence of such a catastrophe as occurred at Bloemfontein, if we are to prevent the continual wastage of men and money which is caused by the prevalence of typhoid fever in our army abroad, there should be appointed a standing committee consisting of scientific workers, preferably of army medical officers properly trained in bacteriology. The committee might appropriately include, as *ex-officio* members, the professors of hygiene and pathology in the Army Medical College, with the double view of obtaining scientific assistance from them and of keeping the officers of the Royal Army Medical Corps in touch with the progress of the work of the sanitary committee. Lastly, the sanitary committee might, as is the case in other War Office committees, be reinforced from outside by eminent civilian sanitarians. And above all the committee ought to be constituted not merely as a committee of reference but as a committee upon which would devolve the working out of the main scientific problems which are urgently awaiting solution in connexion with the prevention of disease in the army. Constituted on the lines indicated above the sanitary committee would be in a measure analogous to the Intelligence Department, to the Ordnance Committee, to the Explosives Committee, and to the Military Telegraphs Committee as already in existence at the War Office.

The Geography of Disease.

SINCE the issue of the last edition of HIRSCH'S monumental work upon "Geographical and Historical Pathology" very material strides have been made in our knowledge as to the geographical distribution of disease. This advance may be accounted for partly by the great developments within recent years of tropical epidemiology and pathology, especially as regards our knowledge of the important part played by animal parasites in causing disease; and partly by the enormous facilities for intercourse with all peoples of the world which have been afforded by the recent expansions of commerce. It is now becoming increasingly recognised that many of the fields of commercial enterprise remaining to be conquered are fields into which at the present time the white man can penetrate only at great risk to his health and life. This point was accentuated recently at Liverpool by Sir ALFRED JONES in a speech in which he admitted that commerce was more indebted to science than was science to commerce; and it is possible that the same view may have accounted, at least partially, for the increasing support which the commercial worlds of London and Liverpool have accorded to the tropical schools of these two cities. Finally, as another invigorating force, we have had until a few days ago at the Colonial Office a Minister who has shown a wish to recognise a particular responsibility in the matter of epidemiology which devolves upon this country. In consideration of our world-wide empire, within one or other portion of which every known, and possibly every unknown, parasite and host has its being, the study of epidemiology is a duty which this country owes to the world and Mr. CHAMBERLAIN appears to have recognised this duty. We hope that his successor will be equally perspicuous.

In all these circumstances it has become highly desirable that our knowledge as to the geographical distribution of disease should be brought up to date. Dr. F. H. H. GUILLEMARD, the general editor of the Cambridge Geographical Series, has evidently recognised this necessity, and he has been fortunate in securing as the author of a book of the requisite scope Dr. F. G. CLEMOW who is British delegate to the Ottoman Board of Health and Secretary for Russia to the Epidemiological Society of London. Dr. CLEMOW'S writings are well known to all epidemiologists and his intimate knowledge of the Russian language has enabled him to study the disease and death records of the vast population of that great European and Asiatic country in a manner which is impossible to most writers. The book[1] is divided for purposes of classification and convenience into three parts. The first relates to General Medical and Surgical Diseases, the second to Diseases of the Skin, and the third to Animal Parasites and Diseases associated with them. The last group is happily arranged and affords some of the most instructive reading in the book. The history and geographical distribution of the pulex penetrans, as given by the author, afford an excellent illustration of the manner in which animal parasites of this nature may become diffused over the world. Throughout the work as a whole each disease is methodically considered so as to convey a clear idea not only of its geographical distribution, but also of its general character, etiology, and history. In a preface upon the Geography of Disease and the factors which determine it we find discussed in a fascinating fashion the complex nature of the problem. Dr. CLEMOW recognises that the something which we call disease consists not only of one essential cause, such as the vegetable or the animal parasite, but of a group of associated factors. It is thus clear that the distribution of any given disease and of the parasite which is one of its essential causes is in no sense always identical. It is not unlikely that the parasite capable of causing specific disease in man exists in areas at present uninhabited either by susceptible human or animal hosts, and in this sense the distribution of any given disease may be greater potentially than actually. When susceptible men or animals migrate to the areas inhabited by the parasite the actual area of distribution of the disease will expand. Conversely, as, for instance, in filariasis, the distribution of the disease may for a time be more extensive than the distribution of the parasite which is its essential cause. Malaria and perhaps trypanosomiasis may be regarded as other illustrations of this group.

Dr. CLEMOW speculates freely as to the explanation of the systoles and diastoles of epidemic diseases—i.e., of those pandemic excursions which certain diseases indulge in from time to time when they break forth from their endemic centres. He points out that, if the general behaviour of these diseases presents an analogy with that of insects, it is only an analogy. The resemblance, it is true, is often very striking. "Some insects," he says, "like some diseases, have permanent breeding grounds in special and relatively limited areas. They may change their breeding grounds. They migrate in certain years to other areas,

[1] The Geography of Disease. By F. G. Clemow, M.D. Edin., D.P.H. Camb. Cambridge Geographical Series. London: C. J. Clay and Sons. Crown 8vo, cloth. Pp. xiv. + 624 and 12 Maps and Charts. Price 15s.

they fly in swarms or in small numbers, they take long flights over thousands of miles and appear in countries where they were before unknown, they disappear almost as suddenly as they came, or they break up into patches, remain more or less permanently in the newly-invaded territory, or gradually die out. In all these respects their behaviour shows complete analogy with the behaviour of such diseases as cholera or plague, influenza or dengue." This is a suggestive passage and well illustrates the philosophic manner in which the author is prepared to regard his subject matter. We have said enough to show that in our opinion this is a book to be studied by all those claiming to be epidemiologists. And it is to be hoped that medical men in India and our colonies who read it will be stimulated to carry on the work which has been ably begun. It is impossible not to recognise how eminently incomplete our records remain of disease in many parts of the world, and these gaps in our knowledge can only be supplied by active local workers. The geography of disease is now admitted by astute statesmen and leading merchants to be a field of knowledge in which valuable national work can be done. We hope that the modern conditions which have led to this feeling among men of political and commercial training will appeal to our readers also, and that in far-off lands the causes and symptoms of disease will be carefully noted and charted for the benefit of humanity.

Rupture of the Spleen.

THE spleen is one of the most friable of the abdominal viscera and all forms of external violence are prone to produce laceration of its substance. Falls are, as would be expected, especially likely to cause this lesion and the falls need not be from any great height. In one case a man fell about seven feet on to his left side on an iron girder and an extensive rupture of the spleen was produced, while PELLEREAUX has described a laceration of the spleen resulting from a mere down-slip while walking in the street. A blow from a cricket-ball has also sufficed to cause this injury in a boy, ten years old, though the ball was thrown by a boy of the same age. A fairly common cause is the passing of the wheel of a cart across the abdomen, though this catastrophe is on the whole more likely to cause rupture of the liver. But if the spleen is liable to rupture in healthy persons who have suffered from no previous splenic affection, the liability is enormously enhanced if from any cause the spleen has been diseased and enlarged. Of all affections involving this organ malaria has the greatest effect in increasing its friability, so that comparatively slight blows may lead to intraperitoneal hæmorrhage from the splenic substance in a malarial subject, and thus a tap with a cane or a pat with the hand, insufficient to cause the slightest bruising of the abdominal parietes, may lead to fatal hæmorrhage from the spleen. Nay, more, there are cases of splenic rupture which have been termed "spontaneous"; in these no external violence of any kind has been employed and yet the spleen has been torn. The only explanation is that in some cases any sudden increase of the intra-abdominal pressure may be sufficient to cause the rupture. Thus Sir JAMES SIMPSON mentions a case in which during labour the spleen was ruptured. Mr. E. ATKINSON of Leeds has described one case in which severe vomiting led to the same result. Dr. R. SIDNEY STONE of Mauritius has recorded a rupture of the spleen in an Indian woman which followed a sudden effort to prevent the fall of a large vessel of water which she was carrying on her head. Dr. BARRALLIER has reported two cases in which young French sailors died from rupture of the spleen during a first and mild attack of malaria. One had returned to duty but was soon after found dead in his hammock, while the other, on attempting to get out of bed, was seized with sudden faintness and died in a few minutes. Dr. FRANCIS NICOLETTI has related a case of rupture of the spleen in a boy, 15 years of age, who had had many attacks of malaria. One day, while carrying a heavy weight, he felt a sharp pain in his left side and died in 20 minutes. In this case it was suggested that the rupture was due to excessive venous engorgement during the great exertion of carrying a heavy weight. A few cases have been recorded in which patients suffering from malaria have died from splenic hæmorrhage, although no effort of any kind appears to have been made. The medico-legal importance of this tendency of the spleen in malaria to laceration can hardly be overrated, especially in tropical climates, and a lack of appreciation of this friability has led in several instances to miscarriage of justice.

The symptoms to which laceration of the spleen gives rise are those of internal hæmorrhage, but the rapidity of the onset of the symptoms varies greatly in different cases. In some instances death appears to have resulted within five minutes, while in others days have elapsed between the onset of the symptoms and the fatal ending. In these latter cases it is probable that the rent in the capsule was at first very small and that afterwards it grew larger. The diagnosis is often not difficult; the signs of internal hæmorrhage are marked, both flanks are dull on percussion, but only the right flank becomes completely resonant on change of position. This immoveable dulness in the left flank is due to the great masses of clot which surround the torn spleen. It has been suggested that the large proportion of leucocytes in the splenic blood favours its coagulation when effused. As to the treatment of ruptured spleen when the diagnosis has been made there cannot be two opinions. Operation is indicated, and it should be commenced at once in the judgment of most surgeons, though some are inclined to wait until the patient has rallied somewhat from the state of collapse into which he has fallen from the severe hæmorrhage. Some of the collapse is doubtless due to the blow on the abdomen and injury to the sympathetic plexuses and this will tend to disappear, but the collapse due to the hæmorrhage will probably steadily increase. The best incision for removal of a ruptured spleen is in the left semilunar line, commencing at the edge of the ribs; its length must depend on the size of the spleen, but in cases where the viscus is normal in size four inches should be sufficient. Where the diagnosis is not certain a preliminary central incision is advisable, to be followed by the lateral incision when the diagnosis is established. The spleen is brought to the wound, its pedicle is securely ligatured, and the viscus is removed. No hesitation need be felt in removing a ruptured spleen. Long before the days of antiseptics

the spleen which had prolapsed through a wound of the abdominal wall had been ligatured and removed, recovery ensuing. Useful as the spleen undoubtedly is in the human economy its function can be vicariously performed by other organs; the lymphatic glands and the red marrow of bone appear to carry on the duties of the ablated viscus, as has been shown by operations on dogs; and in the case of human beings it has been noticed that it is not rare after removal of the spleen for a general or extensive enlargement of lymphatic glands to occur, and sometimes pains in the long bones suggest at least that some medullary hypertrophy is taking place.

The enlarged malarial spleen may also be removed with safety in most cases, but its greater size renders the operation somewhat more formidable. In only one condition is the result of excision of the spleen uniformly unfavourable and that condition is leucocythæmia. Most patients with rupture of the spleen recover rapidly after excision, though convalescence may be retarded by a peculiar form of weakness, probably due to delay in the establishment of the vicarious functions of the lymph glands and the bone marrow. This weakness has been satisfactorily combated by means of extracts of sheep's spleen. In the present issue of THE LANCET we publish a case of ruptured spleen in a malarial subject which was successfully excised by Mr. J. BELL of Hong-Kong. We hope that the success of the case may be permanent. A fortnight ago we published a very interesting case of splenic anæmia where the patient, under the care of Dr. GEORGE PEACOCKE, in the Adelaide Hospital, Dublin, was operated upon in that institution by Mr. T. E. GORDON. Six months after the operation the patient reported himself as free from symptoms and hard at work upon a farm, but in another six months he died, the cause of death not being mentioned.

Annotations.

"Ne quid nimis."

THE FATAL ACCIDENT ON SCAFELL.

WHILE attempting a dangerous ascent upon Scafell on Monday last four young men lost their lives, this being the most terrible disaster in English mountaineering that has happened in recent times. The accident occurred within a few yards of the place where ten years ago Professor Milnes Marshall, the biologist, was killed. One of the four victims was alive when he was found and received attention from a medical man as he lay on the ground; but his injuries were too severe to permit of any hope, and he died while being conveyed to shelter. It is impossible to tell with any certainty how the accident occurred, as the sole survivor of the party was too much injured to allow him to make any definite statements to those who found him and the bodies of his three dead companions, but it is supposed that one member of the party became exhausted and that some change in the order in which they were roped preluded the disaster. The fact is often overlooked that mountain climbing is arduous work and calls for endurance, agility, and a sure eye. Difficult ascents should not be undertaken until the climber has become somewhat accustomed to the conditions under which he will be called upon to exercise his strength and skill. During the first few days of a holiday no attempt should be made to perform difficult mountaineering feats. To go straight from the consulting-room, the surgery, or the desk, with the object of climbing a mountain may, and often does, lead to accidents with a fatal termination. We know nothing of the physique or training of the four young men whose lives have been brought so sadly and suddenly to a close, but are speaking in general terms of warning. They may have been in a perfectly fit condition to attempt the object which they had in view—a difficult climb but one which had been previously performed; nevertheless it too often happens that mountain climbing in England is undertaken on the assumption that no great endurance or skill is required. This is an error. In Switzerland no one except an experienced mountaineer thinks of making the ascent of a difficult peak without engaging a guide. Guides may not be necessary in many mountainous districts in this country, but in their absence hotel-keepers and local authorities might do their best by voice and by placard to warn climbers against feats that are known to be dangerous.

THE VALUE OF SANATORIUMS.

IT is a sufficiently common experience in the arts to find that some process which rests on a thoroughly sound theoretical basis and gives admirable results on the experimental scale proves unsatisfactory when subjected to actual economic conditions. The possibility that an analogous state of affairs may exist in medicine is wont to be ignored and it appears that the provision of sanatoriums for consumptives is a case in point. At first sight the method of treating tuberculous persons in special institutions seems wholly good, and there are many who regard the erection of such buildings as a public duty devolving upon the State, but on closer examination we are compelled to ask whether the undoubted benefits which may be derived from this mode of dealing with the disease are not disproportionate to the expense incurred. At the recent International Congress of Medicine at Madrid Professor Maragliano is reported to have called attention to this matter in the following words: "We must convince ourselves that it is not by means of sanatoria that we shall be able to diminish the number of the tuberculous and defend humanity from this scourge. Popular sanatoria, institutions eminently charitable for the tuberculous poor and capable of contributing powerfully to the cure of this malady, are not able to play the decisive rôle in the social prophylaxis of tuberculosis. Considered under this aspect the sanatoria have the effect of sanitary cordons and quarantines, which were formerly thought capable of stopping the diffusion of epidemics. Science and experience have shown that the best obstacle to oppose to the invasion of infectious maladies consists in creating in the countries concerned good hygienic conditions so as to deprive morbid germs of the medium suitable for their multiplication." The whole question is discussed in the current number of *Cosmos* by M. P. Goggia who gives statistics representing the results obtained in Germany, where there are now 72 sanatoriums of a popular character through which pass annually about 30,000 persons belonging to the lower ranks of society. The average duration of the time under treatment is about three months. Of 424 patients admitted with signs of early pulmonary tuberculosis Engelmann found that at the end of six months 94·7 per cent. could work, at the end of two years 80·3 per cent., of three years 66·7 per cent., and of four years 44·4 per cent. These results can hardly be considered brilliant. Hammer of Heidelberg compares the condition of 72 patients who were three months in a sanatorium with that of 55 treated as ordinary out-patients. Of the former 35 per cent. were "cured" and of the latter 52·7 per cent. In another series of cases Engelmann notes that of patients sent from sanatoriums as fit to work 21 per cent. were

still fit after four years, while of those sent out as unfit 18 per cent. were nevertheless at work four years afterwards. These figures bear out Hammer's experience that the short time which it is possible for the working classes to spend in sanatoriums has practically no direct beneficial influence upon the course of the disease from which they suffer. It is probable, however, that the sanatoriums serve a useful purpose in disseminating hygienic principles, though less expensive machinery could be made to effect this result equally well. Persons furnished with sufficient means to enable them to enjoy sanatorium treatment, not for three months, but for as long as seems desirable, are likely to derive nothing but good from such a procedure, but the attempt to combat the ravages of the tubercle bacillus among the rank and file of the population by means of State-aided hospitals pursuing the open-air method is probably doomed to failure from sheer inability of our national resources to stand the strain thereby thrown upon them.

A SYRIAC TRANSLATION OF THE APHORISMS OF HIPPOCRATES.

M. POGNON, the French consul at Aleppo, is publishing at Henrich's of Leipsic the text and a translation of a Syriac version discovered by him of the "Aphorisms" of Hippocrates. The manuscript is of the thirteenth century. M. Pognon in his introduction gives adequate reasons for thinking that the original Syriac text, of which this manuscript is a descendant, was translated from the Greek before the rise of Islam and therefore it merits very high consideration as a companion to the Greek version of Hippocrates's work. He even suggests that its translator can be assigned in the person of the famous surgeon Sergius, who died at Constantinople about A.D. 536, and who, Bar Hebræus, a Syriac bibliographer, tells us, was the first to translate medical and philosophical Greek authors into Syriac. The high value set upon the "Aphorisms" by Greek, Roman, and mediæval medical men and authors is well known. In 1595 Foesius, in his work upon Hippocrates, enumerates 137 commentaries upon it. The Arabs esteemed it among the most important of all the great classic books and carefully translated it. Now, thanks to M. Pognon, we have ocular testimony to the same high appreciation of it by the many peoples of Western Asia who in the earlier centuries of our era, before the Mahomedan Arabic conquests, spoke Syriac.

THE DRINKING OF METHYLATED SPIRIT IN ABERDEEN.

Dr. Matthew Hay in his annual report for 1902 draws attention to the growing use in Aberdeen of methylated spirit as an intoxicant. It is not, perhaps, generally known that with a view to enable persons engaged in certain industries to obtain an alcoholic spirit for industrial purposes at a relatively small cost the Government authorised the addition to methylated spirit of a small proportion of petroleum oil (3 to 800) the mixture thus produced being practically free from the duty imposed upon ordinary spirits of wine. It was thought that if the spirit was thus rendered nauseous no one would be tempted to use it as an intoxicant. But in Dr. Hay's experiences this addition has failed in its object and he thinks that the poorer and more degraded class of drinkers in Aberdeen are using the altered spirit as an intoxicant in an increasing degree. According to Dr. Hay the only practical restriction upon the sale of methylated spirit is that it cannot be sold on Sundays, and he finds that the traffic in it is mainly in halfpenny- and penny-worths, as much being procurable for a penny as would be equivalent to two glasses of whisky. As an indication of the extent to which the trade in methylated spirit is carried on it may be mentioned that as many as 70 men have been seen to enter a certain grocer's shop in the east-end of Aberdeen in less than two hours. Each is provided with a bottle and, having procured the needed spirit, proceeds to a neighbouring water-tap to dilute the spirit before drinking it. Consumption of the spirit in this form seems to produce a condition of stupor akin to that caused by opium, and Dr. Hay states that in some cases seen by him the stupor was so great that no conscious response could be induced. Methylated spirit tends rapidly to degenerate the drinker morally and physically, much more so than is the case under the excessive use of ordinary spirits. The cheapness of the liquid is such that almost anyone, however low in the scale of poverty, can succeed in satisfying his cravings, and although the drinkers of methylated spirit would prefer alcohol in its usual form they are too poor to be able to obtain their fill of alcohol in the shape of wine, whisky, or beer. The progress of methylated-spirit drinking in Aberdeen is apparently such that the Labourers' Federation is becoming alarmed at the evils resulting from the practice and, as Dr. Hay observes, it would be well that the attention of the Inland Revenue Department should be called to the practice in order that greater restrictions should be imposed upon the sale of this form of spirit either by means of more nauseous sophistication or greater control of sale. It might, too, be well to draw the attention of the central health department to the subject since the Revenue has but little concern with public health or morals.

A TERRIBLE DOWNFALL.

A SAD story was related at Plymouth police-court on Sept. 16th when Robert Fawcitt Granger, L.R.C.P., L.R.C.S. Edin., late of Whitby, was charged, together with his wife, with gross neglect of their three children. Evidence of the insufficiency of food supplied to the children was given, while the dirty condition of their home and sleeping arrangements was also testified to. Two medical men described the grievous physical ills that had been caused by the unnatural behaviour of the parents. The chairman of the bench of magistrates said that the bench had had a very painful experience in listening to the evidence but that they had come to the conclusion that the charge against the two defendants was amply proved. It was quite clear that the defendants had possessed means which enabled them to procure drink and it was also quite clear that drink was the deplorable cause of the male defendant's downfall. A fine in such circumstances as had been put before the bench would not, it was felt, meet the case. We regret to be forced to indorse the severe view taken of Mr. Granger's conduct and that of his wife. They were liable to imprisonment for six months, but they were sentenced only to two months' imprisonment each, to be carried out in the second division, a decision which can only be regarded as lenient, even when the severe moral nature of the punishment is taken into account. We have no doubt, as was suggested for the defence, that there were mitigating circumstances and full allowance seems to have been made for them by the bench. It may have been, and probably was, the result of overwork or mental strain of some sort that caused Mr. Granger to take a false refuge in intoxicating liquors. The labours of the general practitioner are very exacting and a certain number, but only a very small proportion considering the exhausting nature of their duties, do succumb to alcoholic temptation. But when a medical man falls in this way he falls terribly far. He is so accustomed to being respected for his skill and integrity by his patients that when he realises that his professional position is slipping from him he feels keenly the importance of the status which he is losing. To some this feeling brings a

timely warning, to others it brings only a despairing idea that it is now too late to retrieve. A change of district is made for one reason or another. The unfortunate man cannot bear that old friends who respected him should now feel constrained to pass him by; and he hopes that in a new neighbourhood he may bury the past and regain his self-respect. Sometimes this is the fortunate issue, but much depends on what employment he finds. If he accepts an appointment from a medical aid association, particularly if the appointment is one that has been declined by his professional brethren, and the association is one that is managed upon the lines which we have so often had to deprecate in these columns, there is not much hope for him. Anything that tends to further loss of his self-respect will help him on the downward path. Now the medical officers of certain medical aid societies are not asked to retain their self-respect; they are not expected to have any strong feeling for their professional position. What is wanted by the managers of some of these institutions is a servant to do the work cheaply. There is little hope of the medical man who has already made a bad start in life regaining his forfeited ground if he takes an appointment under such a medical aid association.

THE WILLIAM CADGE MEMORIAL.

Dr. Michael Beverley, treasurer of the fund that is being raised in memory of the late Mr. William Cadge, informs us that it has now been decided to erect a permanent memorial in the cathedral of Norwich where the famous surgeon's life was spent. Subscriptions, which are limited to one guinea and confined to the medical profession, should be sent to Dr. Beverley, Norwich, and among the subscriptions which have been already received are those of Lord Lister, Sir Thomas Smith, Bart., Sir Hugh R. Beevor, Bart., Sir Alfred Cooper, Sir Peter Eade, Sir Frederic Bateman, Dr. Robert Barnes, Professor Howard Marsh, Mr. Reginald Harrison, Mr. A. Pearce Gould, Mr. Rickman J. Godlee, Mrs. Garrett Anderson, and Dr. C. Holman. Mr. Cadge was a great exponent of British surgery and a noble benefactor of medical charities, and having regard to his career in both capacities those who are promoting the movement for the perpetuation of his memory may well expect to receive support from our readers.

THE TREATMENT OF SEWAGE IN MANCHESTER.

ABOUT 50 members of the city council of Manchester recently inspected the sewage works at Davyhulme where the old chemical system may be seen side by side with the bacterial system, so that they can be readily compared. There is not much difference in the clearness of the effluent, but it appears that the chemically treated effluent, if allowed to remain in a closed vessel in a warm place for a few days, will go black and give off an offensive smell, while the effluent from the bacterially treated sewage will, under the same conditions, undergo no such decomposition. The Mersey and Irwell joint committee has not decided at present if it considers the effluent from the bacterially treated sewage satisfactory. It must be remembered that as yet it only passes through one set of contact beds, though the scheme when carried out will provide for two. When completed the first set of bacteria beds will be of half an acre each and will number 92. The second set will cover 46 acres. After passing through the second set of beds the effluent will, it is said, be as clear as drinking water. "It is considered doubtful, however," our Manchester correspondent writes, "if the Local Government Board will accept the scheme, for the Board has a preference for running sewage through the land. Should this be insisted on irrigation works at Carrington and at Flixton, covering 100 acres, will be brought into use. The works at Davyhulme were originally designed for treatment by chemical precipitation. The precipitation tanks were 11 in number and of these six are now used as septic tanks. The works now being carried out will comprise five additional tanks, with contingent works similar to the existing precipitation tanks, 46 acres of first-contact bacteria beds, and 26 acres of storm-water filter beds, all at Davyhulme; a conduit for the conveyance of first-contact effluent from Davyhulme to beds and lands at Flixton, and 46 acres of second-contact bacteria beds at Flixton. The scheme has been designed to deal with 126,000,000 gallons in 24 hours, the flow up to 63,000,000 gallons being treated on the bacteria beds. The remainder will be dealt with on the 26 acres of storm-water filter beds which are to be provided."

THE HARBEN LECTURES FOR 1903.

THESE lectures, under the auspices of the Royal Institution of Public Health, will be given in King's College, London, by Professor Ferdinand Hueppe of Prague, on Oct. 8th, 12th, and 15th, at 5 P.M. each day. The subjects for the respective days are (1) the Etiology of Infectious Diseases from the Standpoint of Natural Science; (2) Hygienic Lessons to be derived from the Serum Treatment; and (3) Tuberculosis. With regard to tuberculosis the medical profession will be particularly anxious to hear Professor Hueppe's views which have already been outlined in our columns.[1] Professor Hueppe considers that Professor Koch's attitude with regard to the non-transmissibility of infection from cattle to man is in direct opposition to the professor's own previous teaching, and he has pointed out that if Professor Koch is correct the measures hitherto taken against bovine tuberculosis must be, in the first place, too severe and, in the second place, of no avail for the suppression of human tuberculosis. Professor Hueppe has made personal investigations, with results which oppose those of Professor Koch, and we hope that he will give medical men in this country an opportunity of judging his work in this direction.

FEVER AND CONVULSIONS DUE TO ASCARIDES.

THE fact that round worms may produce fever does not appear to be recognised by British writers, yet it is well known to French clinicians who have described a condition resembling typhoid fever. "Lumbricose à forme typhoïde" is the subject of an article in the *Semaine Médicale* of Nov. 27th, 1895, by Dr. Chauffard.[2] In *La Policlinique* of June 1st Dr. Wettendorff has published four cases showing that serious symptoms may be produced by the ascaris lumbricoides. In the first case a girl, aged 12 years, was seen on Feb. 9th. For some days she had suffered from anorexia and malaise and a rigor had occurred. There were headache, intense thirst, and a temperature of 104·3° F. For the next three days the symptoms persisted and at night she was delirious. The pulse was rapid but regular and the abdomen was slightly distended. Dr. Wettendorff hesitated in his diagnosis between the cerebral form of typhoid fever and meningitis. Three doses of one and a half grains of calomel were given. On the following day a mass of round worms of the size of the fist was passed and the symptoms disappeared. In the second case a girl, aged eight years, had a rigor and a temperature of 104°. One and a half grains of calomel and three-quarters of a grain of santonin were given but the temperature remained elevated. On the third day calomel and santonin were again given; two ascarides were passed and the temperature abated a little, but it did not reach normal until five days after the passage of nine more ascarides. In the third case the patient was a girl, aged five years, and the temperature, as in the

[1] An article by Professor Hueppe entitled "Tuberculosis, Bovine and Human," was published in THE LANCET of August 31st, 1901, pp. 610, 611.
[2] THE LANCET, Dec. 4th, 1897, p. 1469.

preceding case, did not reach normal until all the ascarides (24) were passed. In the fourth case a girl, aged 11 years, was suddenly seized with epileptiform convulsions. She fell down, lost consciousness, and had tonic and clonic spasms of the arms. On the following day she was restless, refused food, and had a second epileptiform crisis. As she was constipated castor oil was given. Some round worms were expelled and the symptoms disappeared. Convulsions due to round worms are an admitted possibility by most French writers, but the existence of fever from the same cause—"fièvre vermineuse"—is denied by some. As to the pathology of these conditions the suggestion is made that they are due to toxins absorbed from the worms. Experiments have been performed on animals by injecting fluid obtained from ascarides into different parts of the body. Sometimes no effects were observed; at other times death rapidly followed. Dr. Wettendorff suggests that the parasites secrete toxins of variable virulence, which explains the fact that they may produce no symptoms whatever in some cases and severe ones in others.

AUTOLYSIS IN LOBAR AND UNRESOLVED PNEUMONIA.

IN the July–August number of the *University of Pennsylvania Medical Bulletin* Dr. Simon Flexner, professor of pathology in the University of Pennsylvania, suggests that the explanation of the failure of the exudate in unresolved pneumonia to be absorbed readily might lie in an imperfection of the autolytic processes taking place in the inflamed lung. That organs protected from decomposition tend to undergo solution by a process of self-digestion was first accurately shown by Salkowsky in 1882. This process of autolysis has now been studied from many different sides and it has been found that the intracellular ferments causing autolysis form a most important and potent series of agents which come into play under both physiological and pathological conditions. There is little doubt that in many pathological conditions the leucocyte is the essential agent in bringing about absorption. The different behaviour of a caseous and croupous pneumonia, the facility with which the one and the difficulty with which the other undergoes resolution, are to be ascribed, probably in large part, to the comparative absence of leucocytes from the tuberculous process and their presence in enormous numbers in the acute inflammatory condition. Friedrich Müller first studied autolysis of the lung in croupous pneumonia and described in detail its occurrence and the chemical products, among which are lysin, leucin, tyrosin, purin bases, and phosphoric acid, of the digestive process. Dr. Flexner has found that it is in the stage of grey hepatisation that autolysis takes place quickly and perfectly, while in the stage of red hepatisation it is very imperfect—a fact that may, he thinks, be attributed to the small number of pus cells present in the latter condition, but if the lung in unresolved pneumonia is exposed to conditions favouring autolysis the process is slow and incomplete as compared with what takes place in grey hepatisation. Unresolved pneumonia is, therefore, in his opinion, an acute lobar pneumonia in which the inflammatory exudate, either because of some disproportion between the leucocytes and other constituents or other cause as yet unknown, resists autolysis, cannot be absorbed and hence undergoes organisation.

THE IMPERIAL VACCINATION LEAGUE AND THE EDUCATION OF THE PUBLIC.

WE have received from Dr. Rees Roberts, the organising secretary of the Imperial Vaccination League, a letter alleging that when the question of a grant to the league was brought before the British Medical Association at Swansea Mr. Wolstenholme made an inaccurate statement of the position whereby the league lost the support of the association. According to Mr. Wolstenholme the league "had decided that it could not recognise, or advise Parliament to accept, the general practitioner as a public vaccinator," but Dr. Roberts says that the league has passed no such resolution. Dr. Roberts points out that it is particularly unfortunate for the British Medical Association not to support the league just now, when the latter body is striving to educate the country into an intelligent appreciation of the meaning and virtues of vaccination. No one would regret more than ourselves that the work of the Imperial Vaccination League should be hampered, but at the same time proper allowance must be made for the somewhat difficult position of the general practitioner. Recent legislation has placed or appears to have placed the public vaccinators in antagonism to the general practitioners of the country in some localities, and every endeavour must be made to allay this friction where it exists. The public must not be able to quote any difference of opinion about the machinery necessary to render vaccination effective and general. For all practical purposes the members of the medical profession, led by the expert opinion of those who have studied preventive medicine, are unanimous in the view that in vaccination and revaccination we have the most valuable safeguard against the ravages of small-pox. As the profession is agreed upon this essential matter all differences as to the best way to make vaccination universal and well-performed are regrettable as tending to conceal the solidarity of opinion upon the greater issue. Mr. Wolstenholme seems, doubtless unwittingly, to have done the Imperial Vaccination League an injustice which we hope that the British Medical Association may yet repair. But we think it likely that the British Medical Association did not act upon Mr. Wolstenholme's words at all, but upon the belief that the Imperial Vaccination League had a contrary view to that of the British Medical Association with regard to the position of the general practitioner.

THE Local Government Board has addressed a circular to town councils and urban district councils drawing attention to the provisions of the Housing of the Working Classes Act (1903). Sir S. B. Provis, secretary to the Board, points out that this Act gives many facilities to town and urban district councils and we hope that the circular may have the effect of stimulating these bodies to exercise their considerable powers under the various Housings Acts. The better housing of our poor is in medical eyes one of the chief necessities of the day.

DURING the week ending August 29th only 1 case of plague has been discovered in Cape Colony—namely, that of a European female at Port Elizabeth. Plague-infected rats have been found at Port Elizabeth, King William's Town, and on board a ship at East London. As regards the Mauritius, a telegram from the Governor received at the Colonial Office on Sept. 18th states that for the week ending Sept. 17th there were 39 cases of plague and 28 deaths from the disease.

THE annual dinner of the past and present students of the Faculty of Medicine of University College, London, will be held at the Hotel Cecil, Victoria Embankment, on Monday, Oct. 5th, at 6.30 for 7 P.M. The chair will be taken by Dr. Walter Rigden. Further particulars can be obtained from Mr. Raymond Johnson, 11, Wimpole-street, W., or Dr. H. Batty Shaw, 7, Devonshire-street, W.

Sir William S. Church will deliver the opening lecture of the autumn session of the Post-Graduate College, West London Hospital, on Medical Education and Post-Graduate Study, at 4.30 P.M., on Tuesday, Oct. 13th. Anyone desirous

of attending may have a ticket on applying to the Dean, West London Hospital, Hammersmith-road, W.

Dr. Louis Parkes has been appointed by the First Commissioner of Works consulting sanitary adviser to the Department, in succession to the late Dr. Corfield.

ANNUAL REPORT (FOR 1901) OF THE REGISTRAR-GENERAL OF ENGLAND AND WALES.

I.

TWO important Blue-books have recently been issued by His Majesty's Stationery Office, both of which contain information of considerable interest to our profession. One of them, by the medical officer of the Local Government Board, we noticed in THE LANCET of Sept. 19th, p. 839. The other, which is the subject of the present article, is the sixty-fourth annual report of the Registrar-General. Although in different ways, each of these publications bears close and very definite relations to the subject of State Medicine. The first deals with the progress of public health administration throughout the country and the last supplies the means whereby that progress may be estimated and indicates by the use of statistical methods how far the various expedients sanctioned by the legislature have been effective in promoting the health and well-being of the community.

Our readers will remember that a few weeks ago the President of the Local Government Board was questioned in Parliament as to the reason for the delay which takes place in the publication of this and other important reports concerning the public health which are issued annually by his authority. The following remarks of the Registrar-General go far to explain, if they do not justify, this delay which, as regards the present year at any rate, we believe to be exceptional. "Before concluding these remarks," says Mr. Dunbar, "I wish to call attention to the fact that the statistics respecting births, deaths, and marriages in England and Wales which are presented therein, and in the accompanying letter from Dr. Tatham on the causes of death, have been compiled after a detailed analysis of the 'certified copies' of the registers which are deposited at regular intervals in this department. The process of compilation can only be commenced after these certified copies, containing in the aggregate about 1,700,000 entries in a year, have been subjected to close scrutiny and the numerous points of doubt have been cleared up by correspondence; it must further be borne in mind that a large proportion of this work can be performed only by specially trained clerks. In the present instance the revision of an enormous number of death-rates relating to the years from 1891 to 1900 has been required in accordance with the detailed results of the recent census, and an important rearrangement of the form in which the statistics of the causes of death are tabulated has also been adopted." He then goes on to explain that pending the publication of the annual reports other summaries and statistics, necessarily less elaborate and only approximately accurate, but still of great value in relation to public health, are periodically issued. First appears the "weekly return" which is prepared with all possible despatch and is made available to the public every Wednesday morning. This return consists of a detailed analysis of the causes of death in every town in England containing a population of more than 50,000 inhabitants. Next comes the "quarterly return" which relates to the entire population of the country and is issued about a month after the end of each quarter of the year. This return gives particulars of the mortality from some of the principal causes for each of the registration sub-districts of England; it also records (and this is an entirely new feature) the number of notified cases of infectious disease as returned from certain of the larger towns. This return further contains a summary of the mortality tables relating to the great towns dealt with in the weekly returns and additional tables respecting 163 other towns containing between 25,000 and 50,000 inhabitants. Niceties of statistical classification would be obviously impossible in returns made by 2000 lay registrars and compiled with the greatest possible despatch, but the general results are of considerable value to the Local Government Board and are accurate enough for immediate practical purposes. The "annual summary" follows on these publications and is issued in the early months of the year succeeding that to which it relates. It recapitulates the statistics concerning the great towns of England that are included in the weekly and quarterly returns. After briefly alluding to the decennial supplement, which is the most important publication issued from the General Register Office, treating as it does of occupational mortality in the ten years intervening between the last two censuses, Mr. Dunbar goes on to say: "Since entering on the duties of this office I have made careful inquiry as to the scope of the various statistical publications for which I have become responsible. As the result of this inquiry I am satisfied that the need for current information as to the state of the public health is effectively met by the series of returns above referred to. I further think that although the detailed annual reports should no doubt be issued as promptly as possible it is even more important, in view of their permanent character, that none of the care hitherto exercised in compiling them should be sacrificed for the sake of early publication."

For our own part we confess that we are amongst those who think that the value of the Registrar-General's annual reports is seriously discounted by the lateness of their publication. Notwithstanding the Registrar-General's contention to the contrary, we still fail to see why, as in the present case, the issue of his report should be delayed until 21 months after the close of the year to which it relates. We are glad, however, to note that Mr. Dunbar himself recognises the desirability of earlier publication and we cannot doubt that in future he will use his influence for its accomplishment.

The annual report now under review is technically styled the sixty-fourth, but a cursory examination suffices to show that it has been almost entirely reconstructed throughout, especially as regards the tabular matter. It is obviously fitting that the opening year of a new century should have been chosen as the occasion for revising the statistical details of this important document in accordance with the requirements of modern science. We fully recognise that the modifications now introduced are decided improvements, and we think that the fact that the report has been completely remodelled would have justified the adoption of a title indicating that the present is the first of a new series—for such it is in reality.

The section of this report which has for our profession the greatest interest is naturally that which relates to mortality. That section of the Registrar-General's reports has of course always been written by the medical member of the staff and for the first 40 years it was duly authenticated by his signature. In the present report we are gratified to find that after a considerable interval the aforesaid practice has been resumed. This is indicated in the introductory remarks of Mr. Dunbar, in the course of which, after intimating that this section of the report would be contributed by Dr. Tatham, he makes graceful allusion to the services rendered to this department by our profession in the following words: "It occurs to me that the medical practitioners of this country, on whose generous coöperation the accurate compilation of vital statistics so largely depends, will in this way more readily appreciate the fact that the particulars they contribute concerning the causes of death are analysed and the results authenticated by a member of their own profession." In reviewing the changes subsequently made in the system of disease classification which was originally devised by Dr. Farr, and which was eventually adopted by the Royal College of Physicians of London in the arrangement of its nomenclature, Dr. Tatham tells us that the records of at any rate the chief causes of death, according to Dr. Farr's method, are still comparable for the 60 years which have elapsed since the establishment of civil registration and may be found in the successive reports of the Registrar-General. In appreciation of the work of his distinguished predecessor he remarks that "although in consequence of recent advances in medical knowledge the etiological classification of Dr. Farr may now be regarded as somewhat out of date, nevertheless it deserves to be remembered that his efforts to impress upon medical practitioners and students the duty of searching beyond *symptoms* for the actual *causes of disease* possessed high educational value at the time—a value which nowadays is perhaps hardly

appreciated. It will universally be recognised as a just tribute to the genius of Dr. Farr that the system which—commissioned to undertake the analysis of causes of death for the whole country—he devised and subsequently improved, should more than 40 years later have commended itself for adoption as the basis of their etiological classification by the highest medical authority in the land."

The modifications adopted in the statistical forms now established for the tabulation of causes of death in the General Register Office are set forth in detail in the report. We may remark, in passing, that the general arrangement of the tables was determined after consultation with the Registrars-General of Scotland and Ireland, so that the causes of death are now tabulated on a uniform principle in each division of the United Kingdom.

In revising the tabular forms for future use in the official reports Dr. Tatham has discontinued the use of the time-honoured classification of diseases under such headings as zymotic, constitutional, developmental, &c. Nevertheless, it has obviously been necessary to adopt some systematic arrangement of the half million or so of deaths that have to be recorded and commented on in each successive year. The arrangement now in use may be seen in any of the mortality tables from various causes contained in the present report. It should clearly be understood, however, that the grouping therein shown is provisional only and is adopted merely for convenience of tabulation; it must not be regarded as a scientific classification of disease.

Recent investigations have cast considerable doubt on the validity of some hitherto accepted theories concerning the nature and affinities of important morbid conditions, certain diseases formerly considered merely local being now authoritatively declared to be essentially infective in character. In all such cases the disease in question has been transferred from its original place in one group to an entirely different heading in another group, thus seriously impairing the comparability of those groups of disease the composition of which has been modified. It should be remembered, however, that what is essential in statistical tables intended for public health purposes is that they should furnish comparable details for successive years—not concerning arbitrary groups, but concerning individual diseases considered as causes of death.

Inasmuch as there is good reason to hope that in the wake of further advances in pathology corresponding improvements will follow in medical nomenclature, it is doubtful whether any stereotyped classification of diseases would permit of modifications from time to time commensurate with the needs of science. The case of the old order of "constitutional diseases" furnishes a weighty argument against adherence to the classification hitherto in vogue. This order consisted of two principal sections—"tuberculous diseases" and "malignant diseases," with a few other conditions of less importance. Tuberculosis having been necessarily removed from this order in consequence of its infective character the group has been practically destroyed, for the attempt to retain the name "constitutional" for what remained of the group—cancer, rheumatism, and diabetes being in juxtaposition therein—could have only led to confusion. Pneumonia likewise, in recognition of its infective nature, has been removed from among local disorders and inserted among those conditions to which it has greater affinities. Several other important changes are referred to in the report which we have not the space to notice in detail. But we may remark generally that the classified list of diseases hitherto in use has been replaced by a simple enumeration of individual causes of death which may be classified by inquirers according to the needs of any given investigation and the hope is reasonably expressed that any modifications which may hereafter be required in the national records of mortality will not seriously affect the comparability of facts in a series of years.

(To be continued.)

SWANSEA GENERAL HOSPITAL.—At the meeting of the committee of this institution held on Sept. 16th the house committee presented a report recommending that the number of beds in use in the hospital should be reduced from 125 to 98, as there was an unfavourable balance of £850 against the charity and the present income was only sufficient to support 98 beds. After some discussion an amendment was carried that the number of the beds should be reduced to 110.

THE ROYAL COMMISSION ON THE WAR IN SOUTH AFRICA.

SECOND NOTICE.

WE need make no apology for returning to the consideration of the findings of the Royal Commission upon the preparations for the war in South Africa. As medical journalists we are, of course, mainly concerned with the late war in its medical aspects and in its relation to the medical services and to those members of the civil profession who took part in it. We have already dealt with the chief points connected with the Army Medical Service,[1] to which the Royal Commissioners devote some nine pages of their report. But it does not seem fitting that in a matter of such great national importance, and involving questions of universal interest, our reflections should be circumscribed within purely professional limits. It should always be borne in mind that medical aid in modern warfare is of growing importance and concerns us all, and that investigations of the nature and extent of those of the Royal Commission have a wide embrace and bearing. They throw considerable light upon the mutual relationship and interdependence of different arms of the service and upon the various vicissitudes through which the medical services have passed, and incidentally they show that those services have been occasionally discredited owing to conditions and circumstances which were either altogether, or for the most part, outside and beyond their control. We have always endeavoured in the articles which have appeared in THE LANCET to deal in a broad, comprehensive, and progressive spirit with the subject of medical aid in modern war. We have striven to indicate the lines on which the foundations of what might eventually become an Imperial Medical Service could be laid, and we discern much in the report and minutes of evidence regarding the late war in South Africa in harmony with our own views as well as with those expressed in the evidence of Sir W. G. Nicholson, the Director-General of the Mobilisation and Intelligence Department of the army. Some comprehensive scheme, based upon the results of our experience in the South African campaign, has still to be formulated by the War Office for the organisation and unification of all the voluntary and colonial forces of the empire for the purposes of war, and in this scheme the question of medical aid in time of war must take its due place.

In common with most people we have risen from a study of the report of the Royal Commission and of the minutes of evidence with feelings of serious surprise. In whatever direction we turn we encounter evidence of the same state of unpreparedness. It is not, of course, the first time that the Government of this country has blundered into and out of a war. While making every allowance for the fact that no one appears to have believed seriously in the imminence of war, the extent of the muddle that existed before, and long after, the outbreak of hostilities nevertheless seems incredible. And it must be regretfully admitted that this state of affairs at home was accompanied and followed by evidences of much military incapacity in the field. It is humiliating to think of what must be the opinion of foreign military Powers of our methods of military administration. Despite the warnings of the Intelligence Department, which for all its starved state had nevertheless collected a very valuable body of evidence, and despite all that was known and currently reported of the huge military preparations that had been made by the Boers, no one in authority, whether political or military, seems to have made any thorough and strenuous attempt to realise the position. As far as our South African struggles are concerned the late Lord Salisbury is now seen to have been justified in saying that our political constitution is a feeble instrument for war, but it is not possible to assign all the failings of those who had the conduct of the war to the shortcomings of our constitution. It must be conceded that, apart from any enervating and prejudicial influence attributable to mere party spirit or to an anti-patriotic

[1] Vide THE LANCET, August 29th, 1903, p. 624.

attitude, the War Office system followed by each Government in turn is a very ineffective one. In the present instance there was no end to the writing of minutes—some of them apparently being written more as safeguards of individual reputations against future adverse criticism than purely in the public interest—but the reader of these ponderous volumes nowhere finds any evidence that there was a clearly defined organisation. The political and military heads of the army do not seem ever to have sat down together with their proper advisers and experts to consider the actual position of affairs. There was no responsible collective opinion. No attempt was made to thresh out the probable contingencies of a campaign in South Africa and to consider the adequacy or not of the existing fighting material to meet its probable needs. The nation has certainly a right to expect from its statesmen and soldiers foresight and intelligent coöperation. It is painful to read of the recriminations, divided counsels, and other evidences of ineptitude that are recorded in these volumes. And the most extraordinary thing is that every succeeding Government has had an old and long-tried model of a successful system of joint responsibility and authority before them for imitation in the Admiralty. There were also for their guidance the results of Lord Hartington's Commission of Inquiry which 13 years ago made recommendations substantially in accord with those of the present Royal Commission. Matters still remain, however, as they were, and the latest Royal Commissioners, notwithstanding all the alleged reforms recently instituted on the civil and military sides of the War Office—in which, through the instrumentality of various boards with different functions, everybody seems to be advising everybody else—have put on record that they "are not satisfied that enough is being done to place matters on a better footing in the event of another emergency." "The true lesson of the war is," in the words of the Commissioners, "that no military system will be satisfactory which does not contain powers of expansion outside the limit of the regular forces of the Crown, whatever that limit may be." It is Sir George Taubman-Goldie's conviction that the lack of such a system "in our military organisation has cost the country no less than a hundred millions sterling; that it was a principal indirect cause of the outbreak of war; that for some months it left the United Kingdom practically denuded of trained soldiers; and that it produced the most perilous international situation in which the Empire has found itself since the days of Napoleon. Only an extraordinary combination of fortunate circumstances, external and internal, saved the Empire during the early months of 1900, and there is no reason to expect a repetition of such fortune if ..... the next national emergency finds us still discussing our preparations."

The report of the Royal Commissioners strikes us as being, on the whole and in the circumstances of the terms of reference, an excellent report—temperate, wise, and discriminating, and quite as important from what it plainly leaves to be inferred as by what it actually says. The notes supplied by Lord Esher, Sir G. Taubman-Goldie, and Sir John Jackson add much to its value. The inquiry has been carried out without favour or bias of any kind, and the cross examination of witnesses has been conducted, in our opinion, with much ability and evidently with a view to get at all the facts. There is one subject, however, on which the Commission failed to elicit information, and this will be greatly regretted by the medical service and the profession—we learn nothing of the loss of the waterworks at Bloemfontein. It was very important that all the facts connected with this event should have been sifted and the responsibility for its occurrence settled. It was in all probability in consequence of the loss of these waterworks that enteric fever assumed such epidemic proportions in Lord Roberts's force. No preparation had been, or in the circumstances of the case probably could have been, made for such an outbreak, because all available railway transport had at that time to be utilised for the supply of food and ammunition to the troops, if they were to be saved from starvation and safeguarded from defeat. That there was a lamentable breakdown of hospital arrangements on that occasion is undeniable, but it is to be regretted that the facts were not elicited by the Commission and put on record. The deplorable outbreak of enteric fever at Bloemfontein, it will be remembered, led to severe criticism of the Army Medical Service, and it would have been useful to learn the facts and to see how far developments in that service might prevent such catastrophes in the future.

We notice that there is a general disposition, in which we cannot concur, to focus all the blame of our unpreparedness on the then Minister for War, Lord Lansdowne. All the circumstances at the time have to be borne in mind. The position was confessedly one of extreme difficulty owing to many grave political considerations which can be fairly urged in reasonable explanation of the course of action adopted by Lord Lansdowne, whose evidence should be read carefully. And a fact must in fairness be borne in mind, which seems to have been lost sight of, that the organisation for sending a force abroad had been calculated on a certain scale and that the War Office authorities had, so far as the begnning of the war was concerned, fulfilled all that had been expected of them in the circumstances, but this organisation almost necessarily broke down when four or five times the number of troops originally intended had to be sent.

The Commissioners, referring to the report of the Hospitals Commission of 1900 upon the Care and Treatment of the Sick and Wounded in the South African Campaign, state that they see no good reason for re-opening that general question. But they have nevertheless instituted some inquiry into the *personnel* and equipment of the Royal Army Medical Corps as tested in the war and have, as our readers already know from our previous notice of the report, dealt with these questions at some length. To recapitulate a few points as succinctly as possible, we may say that, as in all other departments, but more especially so in that of the medical, the existing establishment, both of officers and of orderlies, proved totally insufficient and had to be supplemented from civilian sources. As to the skill of the army surgeons and the quality of the equipment the views expressed by the witnesses were somewhat divergent, but the testimony to the personal zeal and devotion of the medical officers was practically unanimous. The Commissioners say: "Our attention was called to the fact that in point of opportunities of acquiring skill the British system had long been inferior to that of some foreign countries, that, for instance, of Germany, where not only are the military hospitals much larger and better managed but where every medical man in the army can, at short intervals, apply to be admitted to the practice of civil hospitals. In Russia civilian patients are admitted into the military hospitals. ..... It would not, of course, be possible that the country should maintain in peace a medical army staff which could meet unassisted the emergency of a great war and there can be no doubt that in the event of such a war a sufficient number of civilian medical men can be obtained. But, if only with a view to our constant small expeditions, it is desirable that the officers of the Army Medical Corps should have opportunity of maintaining their professional skill at least on a level with that of the average surgeon in civilian practice." All this may now, it is hoped, be regarded as a thing of the past. The testimony of Sir Henry Brackenbury, to cite a single instance, shows that not only was there no reserve of hospital stores and medical equipment but that as regards the munitions of war generally this country was, and had for some time been, in a state of deplorable unpreparedness for war.

Now the most obvious requirement upon a declaration of war is preparedness. We should hesitate to say so obvious a thing if every line of the report of the Royal Commission did not show that this essential fact had been lost sight of in this country. If there is one thing more than another which the report has brought to light it is that the arrangements and preparations for war are not carried on in time of peace in a sufficiently systematic and business-like manner. The safety of the country and its readiness for war have not been steadily kept in view. In the matter of reserve stores, whether medical or otherwise, to take a single instance, the particular Government which happens to be in power is only too apt to shirk the financial burden of their proper upkeep. The responsibility for perfectly needful expenditure is left to succeeding administrators unless some large and unexpected demand brings the shortage to light. There is, of course, the risk of stores deteriorating or becoming obsolete, and in respect of medical, surgical, and hospital stores generally this is notably the case. To a certain extent this may excuse the reluctance to give large orders for materials but it does not excuse the omission to make arrangements under which large

orders, when given, will be fulfilled with expedition. There are, as a rule, the strongest political reasons why the Government of the day should withhold its decision on such a question as war as long as possible, and should only let it be known when war has become inevitable. The consequence is that the political situation gets acute before the war preparations are complete, and for want of timely warnings all is hurry at the last. It does not seem possible for this hurry to be avoided; all the more necessary is it that previous preparations in such directions as they *can* be made *should* be made. If we turn to the past histories of military organisation, War Office reforms, and plans for re-organising the head-quarter staff, as recorded in the evidence of those most intimately acquainted with the subject, the result is not more satisfactory than is the contemplation of an inevitable unreadiness. The division of powers and responsibility which, according to both the Hartington Commission and the Dawkins Commission, was the main source of weakness at Pall Mall, has been going on for a long time and still exists, and has become a matter which, as Lord Rosebery has said, is not a question of party but of national safety. The nation must therefore see that our military organisation is settled on some more secure base; the shifting sands of party government offer no foundation upon which to rear a structure of permanent value.

One of the first things to be determined in any given campaign is what is to be the percentage of medical strength for a force—a matter which must obviously depend upon a variety of circumstances, such as can only be properly considered at the time and in connexion with each war. In the case of South Africa the circumstances proved to be altogether exceptional and, as everyone knows, the strain on the medical service grew more intense as the war went on and the forces engaged in it were enormously increased. At the time when the first expedition went out it was never expected that more than one army corps would be necessary, and to meet the needs of this the medical strength required proved to be much in excess of what had previously been deemed proportionate. Taking the war in South Africa as a whole it is estimated that counting the medical strength of all kinds it was approximately from 3 to 4 per cent. of the total forces. The commissioners tried to elicit information from witnesses with the view of getting some idea as to what would be the proper proportion, and the military medical witnesses, speaking generally, agreed with Professor A. Ogston's estimate, based on statistics of other modern wars, that about 5 per cent. of the total strength of a force ought to be connected with the Army Medical Department

There is one fundamental difficulty in the professional training of our medical officers which has been largely overcome by an essentially military power like that of Germany. It is to make such training as far as possible of a practical character. Actual experience in the application of medical and surgical methods, such as falls to the lot of members of the medical and surgical staffs and to the resident surgeons and physicians of civil hospitals, has, it is needless to say, a value of its own compared with which other acquisitions of knowledge are of relatively insignificant importance to the individual or to the State. Medical officers should unquestionably be encouraged in making themselves acquainted with the methods of army medical administration, hygiene, and equipment of other countries, and we look forward to the time when leave will be granted to them for this purpose and for taking out special courses of instruction both in this country and on the continent. It is beyond the scope of any man to cope equally well with the art of modern surgery and with medicine, hygiene, medical statistics, and army hospital administration, but army medical officers have perforce had to fulfil the multifarious duties implied in such all-round knowledge. There is a growing tendency in the present day for young men to devote themselves to different branches of scientific knowledge, and while it is unreasonable to expect that all army medical officers can become experts upon one side or the other of their calling, and not only unreasonable but undesirable, it seems to us to be certain that in the near future there will be some specialisation of function in the service. The report of the latest Royal Commission considers that in the interest of the army all officers in the Army Medical Service should have opportunities of refreshing their professional knowledge and that anyone endowed with any special ability and aptitude in direction should have reasonable facilities for cultivating them. The Director-General should certainly have such a knowledge of his medical officers as would enable him on the outbreak of war to put his finger upon the right men to fill the right places. When all this has been done, however, and when we have a Royal Army Medical Corps of sufficient strength and quality for times of peace (in which phrase we include the times of our perpetual little wars) it will always be absolutely necessary to supplement the service largely from the civil side of the profession in any big war. All the arrangements for adding to the regular medical and nursing services to any required extent should be made by the Government beforehand in time of peace, and we should like to learn that an immediate start has been made in this direction.

If there be one subject more than another that requires to be put upon a satisfactory basis it is that of army sanitation. The Commissioners had their attention called to this subject by several witnesses and among them by Lord Roberts, Sir Charles Warren, Professor Ogston, Surgeon-General Jameson, and Surgeon-General Sir William Wilson, and on reading their evidence we are confirmed in a view that we have previously expressed. What seems to us to be wanted is the organisation of some special sanitary body or corps to form part of every future military expedition, to be composed of a directing advisory portion armed with the requisite power and authority and an executive portion to give effect to, and to carry out, the practical sanitary work required on field service. It is necessary if we are to avoid disappointment that our ideas as to what can and cannot be done should be of a sound and practical kind. Time is an essential element in any sanitary work intended to be of a preventive nature. It has to be borne in mind that in war nothing can be done for an advancing army until the enemy has been defeated and driven out of any given position, when the mischief caused by a polluted water-supply and fouled camps and sites is soon effected. It is not possible to send sanitary engineers in front of an advancing army to select healthy sites for camping, to dig wells, and to construct latrines. Where time plays no part in the contract all this can be done in a leisurely and effective manner, but what the sanitary corps must be drilled to do is to make the best of the circumstances of war. That applied sanitary work so often fails to be carried out in warfare is commonly not so much due to any want of knowledge as to what should be done as to not having the means, appliances, and requisite time for doing it. We are strongly of opinion, however, that every possible effort should be made, and that the skilled advice and coöperation of sanitary experts and of officers of the medical and engineer departments of the army might be utilised for the purpose. The sooner the requisite organisation is considered and settled the better.

There are many other points in the Royal Commissioners' report connected with the Army Medical Service, but it is on turning to, and studying, the minutes of evidence that the reader will find his interest and attention most keenly aroused. Some of these minutes are a mine of curious information and others strike us as containing able and valuable military criticism. There is an amount of intellectual vigour, grasp, and earnestness about much of the evidence that is re-assuring. The reader can leave off with the feeling that, even though he has been perusing a melancholy record of official inefficiency, there is abundant ability available and ready to hand, if the nation will only devise a right method for giving it the requisite amount of freedom and fairplay.

MEDICINE AND THE LAW.

Begging-letter Impostors.

A MAN named Shepherd, educated at Cambridge and ordained a clergyman, was sentenced at the recent sessions at the Old Bailey to 12 months' hard labour for forging and uttering requests for the payment of money with intent to defraud. The attention of medical men has frequently been called in THE LANCET to the ease with which the members of the learned professions, particularly clergymen and medical men, are victimised by impostors belonging, or pretending to belong, to their own calling and to the frequency with which cases of this kind have occurred recently. Shepherd assumed for the purpose of getting money the name of a brother clergyman and by representing him to be

in poverty obtained remittances. He forged the necessary indorsement to a cheque thus received and it was for this that he received the salutary sentence mentioned. His detection was caused by his applying for aid to a clergyman who happened to be acquainted with the handwriting of the gentleman personated and who accordingly made inquiries. Apparently other victims had sent sums of money without asking any question whatever. Impostors of this kind use a clergy list or a medical directory or similar book of reference, to which they can usually have access at a free library, and a letter written to the name given in the begging letter, but to the address found in the professional list of addresses, will at any rate discover whether the person seeking assistance is the man whom he pretends to be. The impostor has, of course, to have his letters addressed to him where he can. Inquiries can also be made of the authorities at schools, colleges, and hospitals where these are mentioned. Appeals of this kind where not addressed to members of the alleged profession of the mendicant are often based upon a supposed university acquaintanceship.

Blackmailing a Medical Man.

At Johannesburg on August 14th a woman named Higham pleaded guilty to the charge of attempting to extort money by threats from Mr. James Alexander Thwaits, a medical man in practice there, and was sentenced to three months' imprisonment with such hard labour as she might be able to perform within the precincts of the prison. The crime was committed with a fatuity and absolute groundlessness which almost necessarily insured its failure, but apart from this the sentence must be regarded as an extremely mild one. The prisoner bore a good character, it is true, and had apparently been left by her husband to maintain herself and five children, with whom she was desirous of leaving the country. Need of money, however, is not usually accepted as an excuse for the commission of so cruel an act as that of Mrs. Higham. With no other motive or reason than the impecuniosity referred to she communicated with Mr. Thwaits, to whom she was a total stranger, threatening to denounce him to the authorities as having performed an illegal operation at a well-known hotel at Johannesburg and as having received a large sum of money for so doing, and she demanded the sum of £200 as the price of her silence. A few days later she reduced her terms to £25, but her intended victim informed the police and thus prevented any measures to defame him which she might possibly have taken in revenge had he been merely content with a refusal to listen to her. To face the situation on such occasions and to invoke the assistance of the police is the best course to adopt, although contempt coupled with the threat of criminal proceedings is sometimes effectual in preventing further molestation and disagreeable publicity is thereby avoided. Even innocent men, however, sometimes, when faced with the possibility of a scandal affecting their good name, have been known to yield and by doing so once have delivered themselves with their hands tied into the power of a merciless robber for the rest of their lives. Towards criminals of this class in England, at all events, but scant mercy is shown, and where grounds exist for the allegation upon which the extortion is based the cruelty is regarded as all the greater, so that the penalty is rendered heavier rather than lighter thereby. Mr. Thwaits is to be congratulated upon having effectively defended himself against the dangerous attack made upon him and it is to be hoped that the punishment inflicted will be sufficient to deter others from similar attempts in the future.

Infant Mortality and Crime.

In two cases dealt with at the recent sessions at the Old Bailey Mr. Justice Ridley passed sentences of three months' hard labour upon young women in connexion with the birth of their illegitimate children. In the one instance a laundress, aged 19 years, living with her mother, had got out of bed and gone downstairs in the early morning to the backyard where she delivered herself of a child which she placed in the dustbin. She went to her work as usual and it was only the cries of the child heard much later from the dustbin which revealed its existence. In the other instance the prisoner was in domestic service and her mistress, who suspected what had occurred, made a search and found the dead body of a newly born infant concealed in a cupboard with a piece of tape tied tightly round the neck. In the first case the offence charged was one of wilfully exposing the child, and in the second case the prisoner pleaded guilty to concealment of birth. In passing sentence upon the case of concealment Mr. Justice Ridley called attention to the frequency of crimes of this class and to the necessity for punishing them, in spite of the pity which he might feel for the prisoner in the distressing circumstances in which she appeared before him. Crimes of this kind are, indeed, extremely frequent, and there can be little doubt that a substantial proportion of the mortality among infants, as well as of the cases of stillbirths, is due practically to child murder. Murder, however, is but seldom charged, partly on account of the lack of evidence necessary to convict and partly because conviction would leave the alternative of punishing homicide lightly or of treating with severity persons who often deserve, and who usually obtain, considerable sympathy. The fact, however, remains the same that if the children were desired to live by their parents they would, in the majority of cases, be safely born and reared. The remedy is yet to be found.

A Conviction under the Dentists Act.

At Bow-street police-court the British Dental Association recently obtained the conviction of a man named Flax who was summoned for using descriptions falsely implying that he was registered under the Dentists Act. 1878, and that he was specially qualified to practise dentistry. The descriptions complained of were contained in advertisements published in a German newspaper circulating in London and were also printed upon business cards. The statements made were as follows: "Ordinary extractions, 1*s.*; painless extractions by a new process, 3*s.* American crown, bridge, and bar work. Stoppings in gold and enamel. Mr. Flax, gold medallist, attends personally. French and American diplomas. Practised with success with first-class English dentists." The magistrate was informed that the gold medal referred to by the defendant was obtained at the Paris exhibition for the manufacture of artificial teeth and that it was not, as the advertisement was clearly calculated to suggest, the reward of proficiency bestowed by any institution, whether recognised or not, in respect of proficiency in dentistry. It was urged in defence that the defendant was qualified to practise in America or France, but the ease with which a diploma might be obtained in America was mentioned in reply to this. Mr. Marsham, dealing with the advertisements and the question of fact submitted for his decision as to whether these contained descriptions falsely implying qualification and registration, found that an offence had been committed and fined the defendant 40*s.* on each of the two summonses against him, with 3 guineas costs. No one could reasonably dissent from such a decision. An advertisement that a man is a "gold medallist" who has "practised with success with first-class English dentists" would naturally convey an impression of British qualifications to the ordinary patient of the class which it was intended to attract, and the defendant might have found it difficult to say for what other purpose the words in question were used.

Looking Back.

FROM

THE LANCET, *SATURDAY*, SEPT. 24, 1825.

HOUSE SURGEONS OF THE LONDON HOSPITALS.

To the Editor of THE LANCET

SIR,—Permit me to address you upon a subject loudly calling for the interference of the Governors of the London Hospitals generally, namely, the appointment of the HOUSE SURGEONS. It is notorious, that any man, however ignorant of his profession, or dull in his natural abilities, by becoming a *perpetual pupil* is considered fully competent to the arduous duties of the office in question, when it comes to his turn. Knowing the importance and responsibility of the situation, and at the same time being aware of the many instances of gross ignorance and neglect that are constantly occurring in the Metropolitan Hospitals, (for I except none of them); are they not (the Surgeons) highly culpable in not endeavouring, by some means or other, to put a stop to a system that must ultimately be productive of disgrace, if not of ruin, to those institutions? Now, Sir,

to remedy this evil, I would suggest that the *six senior* claimants should be *examined* (if not already members of the College of Surgeons), and *that person* should be deemed eligible *who has made the greatest progress* in anatomy and surgery. It is not in the nature of things that a stripling, a mere boy, very often with little more in his head than a fond remembrance of his school antics, can, in the course of (in some instances) a few months, be fit to undertake a charge, which at all times, whether in public or private practice, requires a certain tact that is only obtained by practice and observation. On the other hand, I do not mean to say that a House Surgeon can be expected to be a thoroughly experienced surgeon; undoubtedly not; but I certainly think that a person filling such a situation ought to have a good foundation laid, as far as anatomy and the common cases in surgery go. I have heard it urged, and that, too, by men who ought to know better, that it is not necessary for a House Surgeon to know more than any other pupil, because he is entirely guided by the Surgeons. Now the absurdity of such a remark is too evident to need refutation. Does it not frequently fall to the lot of a House Surgeon to apply the taxis, to reduce a dislocation of the jaw, or thumb, and twenty other minor, but very important operations. When myself a pupil, I have more than once witnessed the irreparable mischief that has been produced by the ignorance and want of anatomical knowledge displayed in an attempt to reduce a hernia. I might mention many instances of irreparable injury to patients from the ignorance of House Surgeons, but shall at present forbear troubling you farther than to express my hope that we shall, ere long, by the timely application of your invaluable LANCET, see a stop put to all the abuses of the London Hospitals, one of the greatest of which the subject of my present communication may be considered.

A MEMBER OF THE COLLEGE OF SURGEONS.

Sept. 1, 1825.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8908 births and 4775 deaths were registered during the week ending Sept. 19th. The annual rate of mortality in these towns, which had been 15·7 and 15·8 per 1000 in the two preceding weeks, further rose to 16·5 per 1000 last week. In London the death-rate was 15·8 per 1000, while it averaged 16·8 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 4·5 in Handsworth, 6·1 in Burton-on-Trent, 8·0 in Hornsey, 8·3 in Bournemouth, 9·0 in Stockton-on-Tees, 10·3 in Walthamstow and in Blackburn, and 10·4 in East Ham; and the highest rates were 22·0 in Burnley, 23·1 in Hanley, 23·5 in Newcastle-on-Tyne, 23·6 in Warrington, 26·3 in St. Helens, 27·2 in Great Yarmouth, 29·5 in Bury, and 30·2 in Middlesbrough. The 4775 deaths in these towns last week included 918 which were referred to the principal infectious diseases, against 1060, 973, and 924 in the three preceding weeks; of these 918 deaths, 691 resulted from diarrhœa, 79 from whooping-cough, 40 from diphtheria, 39 from scarlet fever, 35 from measles, 29 from "fever" (principally enteric), and five from small-pox. No death from any of these diseases was registered last week in Hornsey, Bournemouth, Burton-on-Trent, Handsworth, King's Norton, Smethwick, Barrow-in-Furness, Huddersfield, or Halifax; while they caused the highest death-rates in Great Yarmouth, Hanley, St. Helens, Warrington, Sheffield, Rotherham, and Middlesbrough. The greatest proportional mortality from measles occurred in Warrington and Newport (Mon.); from scarlet fever in Bootle; from diphtheria in Great Yarmouth; from whooping-cough in West Ham, Rochdale, and Newport (Mon.); from "fever" in Grimsby; and from diarrhœa in Northampton, Great Yarmouth, Hanley, St. Helens, Bury, Burnley, Preston, Sheffield, Rotherham, Hull, and Middlesbrough. Of the five fatal cases of small-pox registered in these towns last week three belonged to York, one to London, and one to Liverpool. The number of small-pox patients under treatment in the Metropolitan Asylums hospitals, which had been 57, 49, and 46 at the end of the three preceding weeks, had further declined to 41 at the end of last week; seven new cases were admitted during the week, against 11, six, and nine in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital on Saturday last, the 19th inst., was 1803, against 1774, 1796, and 1772 on the three preceding Saturdays; 261 new cases were admitted last week, against 199, 229, and 212 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 114, 123, and 122 in the three preceding weeks, increased again to 128 last week, but were six below the number in the corresponding period of last year. The causes of 47, or 1·0 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Nottingham, Salford, Bradford, Leeds, Newcastle-on-Tyne, and in 44 other smaller towns; the largest proportions of uncertified deaths were registered in Leicester, St. Helens, Manchester, Sheffield, South Shields, and Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 15·1, 16·6, and 14·4 per 1000 in the three preceding weeks, rose again to 16·1 per 1000 during the week ending Sept. 19th, but was 0·4 per 1000 below the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 13·6 in Aberdeen and 13·9 in Perth, to 17·5 in Edinburgh and 20·1 in Paisley. The 527 deaths in these towns included 19 which resulted from diarrhœa, ten from whooping-cough, eight from measles, six from diphtheria, five from "fever," and three from scarlet fever, but not one from small-pox. In all, 51 deaths were referred to these principal infectious diseases last week, against 90, 88, and 77 in the three preceding weeks. These 51 deaths were equal to an annual rate of 1·6 per 1000, the death-rate last week from the same diseases being 3·2 per 1000 in the 76 large English towns. The fatal cases of diarrhœa, which had been 58 and 52 in the two preceding weeks, further declined last week to 19, of which seven occurred in Glasgow, six in Dundee, and two in Aberdeen. The deaths from whooping-cough, which had been nine in each of the two preceding weeks, increased to 10 last week, and included seven in Glasgow. The fatal cases of measles, which had been four and six in the two preceding weeks, further rose last week to eight, of which seven were registered in Glasgow. The deaths from diphtheria, which had been six, four, and two in the three preceding weeks, rose again to six last week and included three in Edinbuggh and two in Glasgow. The fatal cases of "fever," which had been ten and seven in the two preceding weeks, further declined last week to five, all of which occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 51, 54, and 52 in the three preceding weeks, rose again last week to 71, and were 14 in excess of the number in the corresponding period of last year. The causes of 26, or nearly 5 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 23·1, 15·4, and 18·7 per 1000 in the three preceding weeks, rose again to 19·5 per 1000 during the week ending Sept. 19th. During the past four weeks the death-rate has averaged 19·2 per 1000, the rates during the same period being 14·9 in London and 14·8 in Edinburgh. The 142 deaths of persons belonging to Dublin registered during the week under notice were six in excess of the number in the preceding week and included 17 which were referred to the principal infectious diseases, against 18, 16, and 10 in the three preceding weeks; of these, six resulted from whooping-cough, five from diarrhœa, three from "fever," and one each from measles, from scarlet fever, and from diphtheria. These 17 deaths were equal to an annual rate of 2·3 per 1000, the death-rates last week from the principal infectious diseases being 3·0 in London and 1·0 in Edinburgh. The fatal cases of whooping-cough, which had been three, four, and one in the three preceding weeks, rose again last week to six. The deaths from diarrhœa, which had been nine, ten and seven in the three preceding weeks, further declined to five last week. The fatal cases of "fever," which had been four, one, and one in the three preceding weeks, rose again last week to three. The 142 deaths in Dublin last week included 34 of children under one year of age and 32 of persons aged 60 years and upwards; the deaths of infants were slightly in excess of the number in the preceding week, while those of elderly persons showed

a small decrease. Nine inquest cases and three deaths from violence were registered, and 55, or more than a third, of the deaths occurred in public institutions. The causes of six, or more than 4 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Surgeons: A. W. Tredell, F. E. Robinson, and M. T. Male to the *Virid* for disposal, lent to Plymouth Hospital; J. S. H. Rooney to the *Virid* for disposal; R. Thompson, E. S. Wilkinson, and E. A. G. Wilkinson to the *Pembroke* for disposal: R. Kennedy, J. H. L. Page, and W. E. Ormsby to the *Duke of Wellington* for disposal; and A. F. Fleming to the *Wildfire* for disposal.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel E. H. Fenn, C.I.E., to be Colonel, vice W. McWatters, retired (dated August 26th, 1903).

The undermentioned gentlemen to be Lieutenants, on probation (dated August 31st, 1903):—Arthur Clayton Horner Gray, Douglas Percival Watson, Thomas Scarbrough Dudding, Carrick Hey Robertson, Francis Montagu Maxwell Ommanney, John Edward Powell, Robert Henston MacNicol, Osburne Jevers, David Duncan Paton, Santiago Luis Pallant, Charles Reginald Bradley, Hugh Herbert James Fawcett, Thomas James Wright, Gerrard Ainslie Kempthorne, James Thomas McEntire, Stanley Everard Lewis, Norcott D'Estere Harvey, Joseph Allen Longley, Norman Edwin Dunkerton, Patrick John Hanafin, Arthur Carr Osburn, Marmaduke Cordeux Wetherell, Reginald Thomas Collins, William MacDowall MacDowall, Francis John Turner, Harold Crossley Hildreth, Gordon Stewart Mackay, John Duncan Richmond, Forbes Manson Grantt Tulloch, and Ernest Mure Glanvill. The undermentioned Lieutenants are seconded under the provisions of Article 349 of the Pay Warrant:—C. H. Robertson (dated August 31st, 1903); J. A. Longley (dated August 31st, 1903); and N. E. Dunkerton (dated August 31st, 1903).

Civil Surgeon Reginald Bean Anderson is appointed to the medical charge of the troops and Station Hospital, Bodmin, and Civil Surgeon A. J. Copplestone to the medical charge of troops at Devonport.

IMPERIAL YEOMANRY.

South of Ireland: Frederick Faber MacCabe to be Surgeon-Lieutenant (dated Sept. 12th, 1903).

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers):—4th West Riding of Yorkshire: Arthur Mayers Connell to be Surgeon-Lieutenant (dated Sept. 19th, 1903).

Rifle: 3rd Volunteer Battalion the East Surrey Regiment: Surgeon-Lieutenant Alfred Landon Walter Whitehouse resigns his commission and is appointed Second Lieutenant (dated Sept. 19th, 1903). 2nd (Renfrewshire) Volunteer Battalion Princess Louise's (Argyll and Sutherland Highlanders): James Cowe Herbertson to be Surgeon-Lieutenant (dated Sept. 19th, 1903).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

The Manchester Companies: Charles Roberts to be Lieutenant (dated Sept. 19th, 1903).

DEATHS IN THE SERVICES.

Staff Surgeon William Job Maillard, V.C. (retired), on Sept. 10th, at Bournemouth, aged 40 years. He entered the service as surgeon in August, 1889, was promoted staff surgeon in 1899, and retired in 1902. During the outbreak at Candia on Sept. 6th, 1898, some seamen were landing from the *Hazard* when Surgeon Maillard, who had disembarked and reached a place of safety, returned through a perfect deluge of bullets to the boat and endeavoured to bring into safety Arthur Stroud, ordinary seaman, who had fallen back wounded into the boat as the other men jumped ashore. Surgeon Maillard only failed to bring Stroud in through the boat being adrift and it being beyond his strength to lift the man (who was almost dead) out of so unstable a platform. Surgeon Maillard returned to his post with his clothes riddled with bullets, though he himself was unhurt. For this gallant action he obtained the Victoria Cross.

Colonel William Briggs Allin, R.A.M.C., principal medical officer of the Bombay Presidency, at Landom, India, on Sept. 8th. Colonel Allin entered the army as surgeon in February, 1877, and was promoted to colonel in November, 1900. He served in the Afghan war of 1878-80, for which he was awarded the medal, and with the Nile expedition of 1884-85 when he had charge of the field hospital at Gakdul Wells, being mentioned in despatches, promoted to surgeon-major, and awarded the medal with clasp and Khedive's star. He also took part in the Isazai expedition of 1892 and was in the South African war in 1899-1900 as principal medical officer of the infantry division. For his services on this occasion he was also mentioned in despatches and promoted to colonel.

Captain Percy Alfred Browne, I.M.S., officiating medical officer, 17th Bengal Infantry, on Sept. 5th, at Bannu, India, from enteric fever, aged 27 years. He joined the Indian Medical Service as Lieutenant in 1900 and was promoted to Captain in June last.

Correspondence.

"Audi alteram partem."

PRIVILEGED MEDICAL COMMUNICATIONS.

To the Editors of THE LANCET.

SIRS,—The recent paper of Dr. D. W. Cheever on privileged communications raises many questions on this side of the Atlantic where (except in France) there is no statutory prohibition of the disclosure of facts ascertained *qua* medical man.[1] With us, apart from the application of the law of defamation, the sanction inforcing secrecy is surely moral and not legal, though it is often and expensively reinforced by the loss of professional esteem. The lengthening list of compulsorily notifiable diseases (industrial poisoning, mental, and zymotic) tends to render the postulated obligation less rigid, as also does the growing practice in courts of making uiterior use of medical evidence. The rule is primarily for the protection and benefit of the patient and only applies to him, as such facts discovered during friendly intercourse (of undue influence, testamentary capacity) can be demanded as unprivileged evidence. In England the patient's waiver would be a good defence and should always be obtained prior to discussing him and his disease. Of late the lay press has regrettably broken into the sanctity of the sick chamber of several eminent men and even in technical reports in the medical journals the actual initials and age of a private patient may often reveal his identity to his neighbours. One has only to enter a public library to see how greedily the contents of the medical papers are devoured. Is it unprofessional to report the unprofessional and criminal conduct of another practitioner? Should coroners and the police be encouraged to obtain clues at public hospitals—those relics of the right of sanctuary? Is it wise to lecture upon pathological specimens obtained in private practice? It is a laudable custom for all medical men to keep patients' case notes and illustrations under lock and key and to direct in their wills the destruction of such evidence, for, to quote Junius, they are "the sole depository of their secrets which shall perish with them." In the laxity of the smoke-room we are all offenders and might well remember a solicitor described by Mr. George Meredith, "a very worthy old gentleman he was, with a remarkable store of anecdotes of his patrons, very discreetly told, for you *never heard a name from him.*" An evasive or banal reply should always be ready to such pertinent yet impertinent questions as: "What's the matter with Mr. A, doctor?" or "How did it happen?" "Tell the truth, but be careful *what* truth you tell." Finally, how far is the relation between practitioner and patient mutual, secrecy as to the proceedings being incumbent on the latter? It may be sufficient to repeat Sir William Jenner: "Never believe what a patient tells you another doctor said of his case."

I am, Sirs, yours faithfully,

Inner Temple, Sept. 15th, 1903. STANLEY B. ATKINSON.

*** Every care is taken by us to prevent the revelation of the identity of a patient which Mr. S. B. Atkinson alleges

[1] THE LANCET, Sept. 12th, 1903, p. 767.

often occurs in medical journals and, as far as THE LANCET is concerned, he is in complete error. All our contributors assist us in preventing any unfortunate publicity. We never give the proper initials (save where identification is impossible or unimportant) or private address of any patient, and we never give more dates than are necessary to make the story of the illness a valuable and trustworthy one from a clinical point of view. Lastly, in all cases where pain or inconvenience might conceivably be caused by publication of a report of a case, we obtain from the patient or from his responsible relatives their permission for the appearance of the article. Science occasionally loses by our precautions, as our contributors do not hesitate sometimes to point out to us, but we place the preservation of public confidence in professional discretion higher even than the dissemination of knowledge.—ED. L.

MEDICAL DOCTRINES OF HEREDITY.

To the Editors of THE LANCET.

SIRS,—I am glad to see from THE LANCET of Sept. 19th, p. 845, that Dr. C. R. Niven recognises that he was in error in attributing to me the opinion that parental alcoholism causes increased desire for alcohol in the offspring. Dr. Niven denies, however, that he imputed to me the opinion that acquired characters are transmissible. Of course, as Dr. Niven says that he did not do so I accept his statement, but as he specifically asked me (July 25th) to give "one indisputable instance of the transmission of an acquired trait," I naturally concluded that he imputed that opinion to me (or why should he have asked me for proof of it?) and I think that anyone else who read Dr. Niven's letter without having seen mine would have formed the same opinion. Dr. Niven asks me for evidence as regards the existence of "molecules" in the germ cells. I used this term in a general sense as indicating the ultimate living elements of which the germ plasm must be composed, but it would, I think, be better to adopt Weismann's term and call them "biophors." Of course, these units are hypothetical, but it is necessary to assume their existence before we can even attempt to account for any of the manifold phenomena of heredity. A science of heredity is no more possible without the assumption that the hereditary portion of the germ cell (the chromatin rods contained within the nucleus) is composed of a multitude of minute material particles or "biophors" than a science of optics is possible without the assumption of the hypothetical ether.

The question as to whether alcoholism in the human subject is capable of producing mental or other defects in the offspring is not a matter that can be submitted to direct experiment and therefore rigorous scientific proof is not obtainable. But it does not necessarily follow from this that the indications given by investigations into the family histories of insane persons are altogether unreliable. The fact that healthy children are often born of drunken parents does not in any way disprove such a possible relationship, as so many counteracting circumstances come into play. The same irregularity of result is seen in insanity irrespective of alcohol, which it can scarcely be doubted is hereditary, that is, of course, that the innate tendencies in the germ plasm of which the insanity of the individual is the outward and visible expression are frequently handed on from parent to child. If one parent is insane it happens not very rarely that none of the children are affected, and almost always some of them escape. Nay, when both parents are insane it is the exception for all the children to become so too. Yet in spite of these negative cases we do not on that account ignore the very numerous cases of insanity in which ancestral taint is clearly demonstrated or consider that they bear no relation to that taint in the direction of cause and effect. As regards my own experience I may say that out of 3445 cases of insanity which have been under my care in no less a proportion than one-sixth of the whole a definite history of parental alcoholism without insane taint was obtained. It is necessary to emphasise the fact that from these figures all cases of parental alcoholism in which such alcoholism was associated at any time with any form of mental derangement have been eliminated, which is clearly a very necessary precaution to take. Now all that these figures really prove is that parental alcoholism is a very frequent *antecedent* to filial insanity, and an antecedent need not necessarily be a cause, even if it be constant or well-nigh so. Nevertheless when an antecedent is very frequent it strongly suggests some causal relation between it and the consequent. The evidence thus afforded is the same in kind as that which leads us to think that insanity is hereditary. Here, again, all that we really know is that ancestral insanity is a very frequent *antecedent* to personal insanity. Of course, it is possible that the relationship suggested by the above figures may be purely accidental and that the facts may admit of quite a different interpretation, and I shall be quite prepared to give up my view if proof to that effect can be furnished.

I note that Dr. G. Archdall Reid in his letter of Aug. 29th, p. 630, commenting on the results of Professor Cossar Ewart's important experiments (which I have myself elsewhere[1] referred to), which he recognises as constituting a difficulty in the way of acceptance of his views, throws out the suggestion that possibly the action of poisons on the germ plasm (if such action takes place) may be of the nature of a "modification" and not a "variation" in which case it would not be heritable. The *modus operandi* of a poison on the germ plasm, we, of course, do not know, but it is possible that the action may be different according as it influences the germ cell when fully developed or the same cell when in process of development. In the former case we might expect the change to be a "modification," whereas in the latter it would seem more likely that a "variation" would take place. This is, however, of course purely hypothetical, but I gather from Dr. Reid's remarks that if the change produced were merely a "modification" his theoretical objection to the germ plasm being capable of receiving permanent injury by the action of poisons would be removed.

Dr. G. R. Leighton's letter in your last issue, p. 843, reminds us very opportunely of the great need which exists for the study of biology to occupy a much more prominent part in the medical curriculum than it does at present. The subject is of vast importance—of how great importance is very far from being generally recognised. What is urgently needed is a national laboratory for the experimental study of heredity, which might in its operations lead to results secondary in importance to no others. Columns of THE LANCET are at present being occupied by a discussion on one very important aspect of heredity, and yet neither side is capable of supplying definite scientific proof of its contentions. Yet the question is one which lends itself to experimental inquiry and could probably be definitely settled on experimental lines. As I have elsewhere[2] put it, "Whilst the nineteenth century may be said to have witnessed the placing of the science of biology on a definite scientific basis with the enunciation of the general laws underlying the development of the organic world, so it may well be that the present century may witness not merely an extension of those laws but the practical application of them to the furtherance of the development of the human race." A well-endowed and well-equipped national laboratory for the experimental investigation of all questions bearing on heredity might be potent for human good beyond the dreams of imagination.

I am, Sirs, yours faithfully,

Rainhill, Sept. 20th, 1903. J. WIGLESWORTH.

To the Editors of THE LANCET.

SIRS,—In reading the discussion on the above subject I am reminded of a story which I read lately, given on the evidence of the eminent and veracious Dean of St. Patrick's. A certain man was declared to have a wonderful nose. The learned society of the place met to discuss the case and, having decided that no person could have such a nose, was engaged in passing a motion to that effect, when the man, nose and all, walked into the room. As far as I can discern, the present position of Dr. G. Archdall Reid and those who agree with him is that there is no conclusive evidence against their particular views, that there is a good deal of evidence in favour of them, but that the strongest argument in their favour is the biological doctrine that acquired characters are not inherited, which in Weismann's hands becomes the oppressive assertion that acquired characters *cannot* be inherited. It comes to this, that if this extreme view of Weismann cannot be upheld the whole theory of heredity with which Dr. Reid and his friends are intimately concerned fails them;

[1] "Heredity and Insanity": Journal of Mental Science, October, 1902.
[2] Ibid.

they are then reduced to the laborious business of producing much more evidence than they have yet produced which shall on its own merits convince the unbeliever. But is it true that acquired characters are not inherited? An increasing number of neo-Lamarckians are convinced that it is not true. They may not be able yet to mark out precisely the territory which has been wrongly seized and must be disgorged by selection and are content to proceed slowly and surely. We are very properly challenged by the neo-Darwinians to show a single instance or group of instances in which acquired characters are undoubtedly inherited. The answer is neither difficult nor far to seek. Let them examine carefully the skin of any rather hairy youth of their acquaintance and they will find there an extensive, if intrinsically unimportant, body of evidence against them. The examination of this inconvenient witness will place "our friends the enemy" in an awkward dilemma. They are presumably believers in the simian ancestry of man and in Weismann's doctrine of the non-inheritance of acquired characters. Whatever may be the case in other departments of organic existence they cannot hold to both these doctrines when they listen to the evidence given by the witness referred to. Will they surrender here Darwin or Weismann? This is for them to settle and not for their opponents. For the sake of those who have not for themselves investigated this little line of evidence I would mention that any human skin shows many regions on which the primitive or ancestral direction of hair is still retained. But a larger number of regions and greater extent of the human skin show hair-streams which now widely diverge from those of any conceivable simian ancestor. The chief of these are the occipito-cervical region, the frontal border of the scalp, the ventral surface of the neck, the pectoral region from the sternal angle upwards, the dorsal region of the trunk, the inguino-axillary line, the deltoid region, the extensor surface of the forearm, the dorsum of the hand, the dorsal surfaces of the digits, the proximal third of the extensor surface of the thigh, the dorsum of the foot, and the dorsal surfaces of the digits. Among these 13 separate areas one or two unimportant departures from the simian hair-slope may be attributed to morphological change; but all the rest can only be interpreted according to Lamarck and, what is more, ascertainable mechanical causes for each and all of them are forthcoming. All these, and a greater number among lower animals, are fully treated in a small book which will shortly be published on the "Direction of Hair in Animals and Man." It is certainly premature to close this discussion in favour of Dr. Reid and his supporters on biological grounds. My only reason for addressing you is to draw attention to this aspect of the questions at issue. One would almost apologise for the seeming triviality of the evidence here referred to were it not for Sir Norman Lockyer's recent commendation of the study of the *même inutile*.

I am, Sirs, yours faithfully,

Sept. 14th, 1903. WALTER KIDD.

To the Editors of THE LANCET.

SIRS,—Professor Romanes in his "Thoughts on Religion," if my memory serves me correctly, says that Mr. Darwin was not a profound theologian and that his agnosticism was an outcome of the everywhere terrible cruelty of nature. Should *I* therefore be ashamed for being pained at the same thing? If I, in my darkness, have made my appeal—my impassioned appeal as Dr. C. Mercier prefers to describe it—to those who sit in light for guidance, surely it would have been nobler to let me feel the warm clasp of a guiding hand in the deepening gloom than to deride the natural desire for the kindly light of day. I am no profound philosopher. I shall not be ashamed to sit at the feet of Dr. Mercier and to learn all he has to teach *if only it be true*. Before my lesson begins, however, may I quote an Arabian proverb which says: "Man is four: he who knows not and knows not he knows not, he is a fool, shun him; he who knows not and knows he knows not, he is simple, teach him; he who knows and knows not he knows, he is asleep, wake him; he who knows and knows he knows, he is wise, follow him." I lay no claim to having deep acquaintance with the science of biology; indeed, I am not even a second-rate biologist. It would, however, have been more fitting for Dr. Mercier to treat his opponents with common courtesy and not to compare them to children with pinafores. I am told by Dr. Mercier that a sexually produced child has a father and a mother. I thank him for fact No. 1. I am also told that "In so far as the characters of the father and mother are alike the corresponding characters of the offspring almost always reproduce those of both the parents. For instance, if the father and mother each have four legs and one tail the offspring will almost certainly possess four legs and one tail. But as to those characters in which the parents differ the corresponding characters of the offspring cannot faithfully reproduce those of both parents and in such cases the characters may follow one of several courses," &c. That is fact No. 2, which my childish brain is unable to grasp. I should have wished it could have been more plainly stated. As far, however, as I understand this, it means that when two parents exactly resemble each other in any trait the offspring will also resemble them and reproduce that trait and it is only when the parents differ (though he does not tell me how they come to differ) that the offspring can vary. Now the earliest known birds—the hesperornis, archeopteryx, &c.—possessed teeth and it is surely to be presumed that both sexes possessed them. If the father and mother did not vary the child would continue to reproduce the parental trait—the teeth. We are thus confronted with the difficulty of explaining the loss of teeth in all birds from the Mesozoic formations upwards. If it be said that one of the parents did vary by a "difference between parent and offspring not due to post natal action of the environment on the offspring," then there is the difficulty of explaining how it came to differ from *its* parents if it should have reproduced the parental traits. A more serious difficulty confronts me, for Dr. Mercier in the continuation of the passages I have already quoted from him says that the offspring "may (1) resemble either parent (where they differ) to the exclusion of the other; or (2) resemble either parent at different periods of its life; or (3) the characters may be mixed; or (4) may show a mean average between the two parents." It might have been possible, though even then it would have been difficult, according to Dr. Mercier's reasoning, to explain the loss of teeth in birds; but surely it would be utterly impossible in any of the above four ways to explain the replacement of jaws with teeth by beaks in birds. I pass on to the case of the horse. It may be said that the modern equidæ are animals whose limbs (omitting for the present the slender splint bones) possess only one finger or toe. They are descendants (*vide* Huxley's Lectures) through the pliohippus, &c., of the eohippus of the Lower Eocene, "which possessed four well developed toes and the rudiment of another on the forefeet and three toes behind." If now we try to apply Dr. Mercier's reasoning to explain the loss of toes our difficulties, if they were great with regard to birds, are here much greater. Surely, if both parents possessed four toes the offspring would also possess the same number; if not, how did it come to have less? Or if both parents possessed different numbers of toes how could there be a mixture in the offspring? I do not wish to labour this, as I desire to come back to the "legs of the kittens." Here we have in the evolution of the horse's legs thousands, if not millions, of generations, with millions upon millions of variations in the legs, though the number of the legs and tails remained exactly the same. This is what Dr. Mercier was able to point to triumphantly as the *fallacia a dicto secundum quid et dictum simpliciter*.[1]

Dr. Mercier next proceeds to discuss a hypothetical case in which "the father is a drunkard and the mother may not be; indeed, she may have a great abhorrence of drink," and says, "the offspring may have the father's desire or the mother's abhorrence, or it may follow either at different periods of its life or their qualities may be blended and it will simply have a relish for a glass of beer." Here, again, as I have so often pointed out with regard to Dr. Mercier's reasoning we have statements without any proof. I do not intend to traverse the whole statement, but I do wish to know *how* the mother came to have an abhorrence of drink? Did it grow in her from nothing, just as Topsy herself is supposed to have grown? Or was it the result of a prolonged stringent selection? Does Dr. Mercier believe that man began with no desire for alcohol; if so, has he produced any evidence in support of his belief? I myself believe that man began with a fierce desire for alcohol and am prepared to tender more evidence in support of my belief than you are likely to give room for in your columns. May I in the present case give one instance? So far as we know the Eskimos had no acquaintance with alcohol till visited by the early Northmen. Now Dr. Nansen in his "Eskimo Life, p. 97, says: "They are passionately fond of brandy—women as well as men—not, as they often confided to me, because

[1] THE LANCET, August 22nd, 1903, p. 569.

they like the taste of it, but because it is so delightful to be drunk, and they get drunk whenever an opportunity offers. ..... That the intoxication is really the main object in view appears also from the fact that the Kifaks do not greatly value their morning dram because it is not enough to make them drunk." Not only have we introduced to them our vices but we have also introduced to them our higher (?) civilisation and our diseases. From that day the tragedy of this race began which is leading to their extinction. Hans Egede, nearly the first missionary to them about 150 years ago, calculated their numbers at 30,000; they now number about 10,000. I shall not, however, enlarge upon this subject for, as Dr. Reid truly says in his letter to you in THE LANCET of Sept. 19th (p. 846), there has only as yet been a preliminary skirmish in this controversy. Much has yet to be produced and when it is produced it will be evident there was reason for my "impassioned" appeal to those who know. Let me, however, return to our hypothetical case and ask Dr. Mercier for proof for his statements, for example, that the child may at one time have the father's desire and at another the mother's abhorrence for alcohol. Dr. Mercier twits me for having so recently begun the study of heredity. I admit the impeachment, but surely there is as much credit due to the man who has only recently begun its study and has at least learned *something* about it as to the one who has made it his life's study and has only got so far as to define a variation "as a difference between parent and offspring not due to post-natal action of the environment on the offspring." Dr. Mercier directs my attention to "another counteracting circumstance to which *he first* (?) called attention many years ago, which may save the offspring from being a drunkard and the race from extinction even if both the parents are drunkards. This is the remarkable and powerful tendency that the members of every race evince in ordinary circumstances to return to the form from which their parents have deviated." In this discussion it has been pointed out that there seems as great, if not a greater, tendency for the offspring to vary ancestorwards than in any other direction. I also thought that this had long been recognised by biologists—for example, Darwin in "Animals and Plants," vol. ii., published in 1868, devotes the whole of Chapter xiii. to the subject, and Dr. Harry Campbell in his "Causation of Diseases," p. 84 *et seq.*, published in 1889, refers to the same. It is not for me to dispute Dr. Mercier's claim to priority, but it would be interesting to know the date of his proclamation.

In the last paragraph of his letter Dr. Mercier says that he expects in next week's issue of THE LANCET that I shall credit him with the belief that giraffes lengthen their necks by stretching. And if I did, what matter? It is so reasonable a belief that it is exactly what I believe myself, though space does not permit of my giving my reasons. I know, Sirs, this correspondence is primarily addressed to yourselves, but in reality it is also addressed to many thousands of trained intellects who know the value of evidence. I have made one mistake unwittingly and have had the courage to apologise for it. I leave yourselves and your readers to form their own opinion of the treatment I have received from Dr. Mercier. Had he been able to disprove one of my arguments it would not have mattered much. Some years ago in your columns there were attacks on Dr. Reid himself, the outcome of which was that I determined that I would see what Dr. Reid had to say for his views. I read everything I knew he had written with the result that I am now doing whatever little I can to defend his opinions because they appear to me to be incontrovertible. If it be that the attacks made upon myself should lead others to read "The Present Evolution of Man," "Alcoholism: a Study in Heredity," "A Theory of Acquired Immunity," &c., all by Dr. Reid, I shall remain satisfied. I have no fear of the results; the truths may be unwelcome, but they are still truths and anyway a flood of new light is thrown over one's everyday combat with disease. Whatever be the result I agree with Eimer, who in the last paragraph of his "Organic Evolution" says, "Our duty is work; *our right is free investigation;* our satisfaction the establishment of a grain of truth for the benefit of mankind; our hope—knowledge."

I am, Sirs, yours faithfully,

Liverpool, Sept. 20th, 1903. C. R. NIVEN.

To the Editors of THE LANCET.

SIRS,—To illustrate his theory that such a disease as malaria may cause degeneracy of the offspring of parents afflicted by it and at the same time evolution of the race through the survival of the fittest, Dr. Scudamore takes at "random to represent the vitality of individuals" the numbers 3, 6, 11, 1, 13, 2. His illustration is a very good one and I am grateful to him for it, but surely such immense differences as his figures indicate do not occur in nature. Since we cannot accurately measure degrees of "vitality" we are able to reason concerning them only from the analogy of characters which we are able to measure. Let us take size as an example. In any average group of six men probably the shortest man will not be less than five feet high. If Dr. Scudamore's numbers represented truth we should expect to find the tallest member of the group to be 65 (5 × 13) feet high. Moreover, size among us is no longer a great factor in survival. Size has therefore become extremely variable, just as the colour of our hair has become variable or as animals, domesticated and protected by man and thus no longer exposed to natural selection, become variable. When natural selection is in full swing variability is much less because all the race is kept at a high average. A race exposed to virulent malaria is exposed to very stringent natural selection. Therefore the resisting power among the different individuals probably varies much less than size. If we take the number 1 as representing an individual just capable of survival then such a series as the following will represent the truth much more nearly than that given by Dr. Scudamore: $\frac{99}{100}$, $\frac{99}{100}$, $\frac{99}{100}$ ..... 1, $1\frac{1}{100}$, $1\frac{2}{100}$, $1\frac{3}{100}$ ..... $1\frac{10}{100}$, and so forth. If the number 3, which is the one chosen by Dr. Scudamore to represent the average degree of filial degeneracy, be subtracted from each item of this series the species affected would at once undergo extinction. But in choosing so large a number Dr. Scudamore is, of course, unjust to his own argument. Nevertheless, a very minute degree of degeneracy of offspring would cause ultimate extinction of the race—how minute may be realised when we consider the slowness of the evolution of a species the individuals of which, as a rule, are not much exposed to deteriorating agencies but die violent deaths. Thus a congenitally weak antelope, or one that becomes weak from any cause, is quickly destroyed by carnivora. Degeneration of offspring through parental injury cannot occur to any extent among these animals, yet antelopes evolve very slowly. If external agencies acting on them made their offspring degenerate even to a slight degree the scale would be turned, evolution would cease, and the species would go downhill.

Inborn immunity against many diseases is rare. Thus most people are susceptible to measles. But most people are able to acquire immunity—i.e., recover after an illness of a definite course. The individuals who survive in a country where measles is prevalent are, therefore, not as a rule those who are congenitally immune but those who possess the congenital power of acquiring immunity. Consequently it is the latter character which undergoes evolution—which is, therefore, the object, if I may use the term, of natural selection. The English, therefore, who have been afflicted by measles probably for thousands of years, are just as susceptible to infection as the Polynesians who have only lately experienced the disease; but they make much better recoveries. Clearly, therefore, acquired immunity is not in the slightest degree transmitted to offspring, in whom it would, of course, appear as inborn immunity. Only the inborn power of acquiring immunity is transmitted. Both the disease and the subsequent immunity are profound physiological changes affecting the whole body, yet apparently they have not the slightest effect on the offspring of people who have undergone them. The race is affected only by the elimination of the unfit. Thus chicken-pox is not a cause of death but is a cause of illness and the acquirement of immunity. Races that have been afflicted longest by it apparently take it as readily and as severely and are no more degenerate or otherwise changed than races that newly experience it. Whenever races change we see always that the change is due to natural selection (or the lack of it, but that need not be considered here). Nowhere is there evidence that offspring are affected by agencies acting through the parents. Dr. Scudamore says that such deteriorating agencies *may* cause degeneration, even though no evidence is forthcoming. He lives in the futile world of "may be," in which it is possible to assert that in circumstances not hitherto discovered two and two *may* make five.

I am, Sirs, yours faithfully,

Southsea, Sept. 20th, 1903. G. ARCHDALL REID.

To the Editors of THE LANCET.

SIRS,—I have read all the letters on this subject in the

vain hope of obtaining information until I read Dr. Charles Mercier's letter in THE LANCET of Sept. 19th. May I ask the disputants—or failing them yourselves—kindly to recommend a book on heredity with special reference to medical doctrines, which explains matters as clearly as does Dr. Mercier to his imaginary biology class? The busy student and practitioner need a book of moderate compass which avoids as much as possible the roundabout discussions which spoil these letters. Perhaps one of the disputants will be good enough to write such a book—or some such papers in THE LANCET would help.—I am, Sirs, yours faithfully,

Sept. 19th, 1903. M.D.

To the Editors of THE LANCET.

SIRS,—Dr. Archdall Reid has not misunderstood me. Indeed, he has understood far more than could have been expected from my short letter, which was merely intended to show that these discussions are of use to more than those who actually take part in them. I *do* mean to imply, as he understood, that heredity lies at the root of every social and moral question, or rather that man is and can only be what heredity and his environment permit. In other words, he is the sum total of his innate and acquired immunities and susceptibilities. Hence the great importance of knowing what is transmissible from parent to offspring and what is not. I am glad to see that Dr. Reid has defined exactly what he means by an acquired character and an inborn trait. For the sake of those who have not read his books but who are following this discussion it would have been better had he done so earlier, since it is impossible to discuss a matter in which such widely differing definitions as those of Dr. Mercier and Dr. Reid are referred to indiscriminately. I entirely agree with Dr. Reid that it would be profoundly immoral to suppress the truth for fear of disturbing arguments which the clergy or others have founded upon inaccurate data. I merely wished to show that some of the clergy themselves are beginning to see how these matters affect their own work, which is a sign of a tendency that can be only for ultimate good.

I am, Sirs, yours faithfully,

Sept. 20th, 1903. M.D. EDIN.

A SERUM FOR EXOPHTHALMIC GOITRE.

To the Editors of THE LANCET.

SIRS,—Some time ago—in October of last year—I took advantage of Messrs. Parke, Davis, and Co.'s well-equipped laboratories at Detroit to ask them to prepare for me a serum to be used in the treatment of Graves's (Parry's) disease. This they have done and I recently received from them 20 bulbs, each containing five cubic centimetres of serum from thyroidectomised dogs. My suggestion to Messrs. Parke, Davis, and Co. was based on the following considerations and theory. Myxœdema and exophthalmic goitre present so many points of difference as to be almost contrary diseases—to use a logical rather than a medical term. Myxœdema has long been proved to be due to absence or diminution of the thyroid secretion and exophthalmic goitre, in the opinion of many clinicians and pathologists, is due to an excess of thyroid secretion. Thyroid extract in overdose has produced tachycardia, tremor, exophthalmos, and other minor symptoms of Graves's disease. It is easy to cure the athyroid state by adding thyroid extract, but the only solution of the difficulty of relieving hyperthyroidea has come from the surgeons—notably Kocher of Berne—in their suggestion to remove portions of the gland. There are objections to this treatment on the grounds of danger, of non-success, of the anæsthesia, and of the general weakness of the patient. It occurred to me therefore that it might be possible to neutralise this excessive secretion of the gland by adding, in the form of hypodermic injections, a serum drawn from thyroidectomised animals—a serum, that is, entirely free from those elements which in excess would have caused Graves's disease. My theory is that in such an athyroid condition there may be something present in the blood which will neutralise the effects of hyperthyroid secretion and alleviate the distressing symptoms of exophthalmic goitre.

Professor W. Osler, to whom I made this suggestion some months ago, writes me strongly recommending surgical treatment and adds that, while my serum could not do any harm, he should not expect very much from it. I mention these details in your columns because, although I now possess the serum, I have at present neither in my wards in the Hertford British Hospital nor in practice any suitable cases of Graves's disease and I should therefore be glad to send to any practitioner who desired it a few bulbs of the serum, provided he would send me detailed notes of the case and the results of treatment.

I am, Sirs, yours faithfully,

Paris, Sept. 12th, 1903. A. A. WARDEN, M.D. Glasg.

TYPHOID FEVER IN ARMIES.

To the Editors of THE LANCET.

SIRS,—In a leading article in THE LANCET of Sept. 19th, p. 831, you have drawn medical attention to my letter on the prevention of typhoid fever in armies in the *Times* of Sept. 1st and to the leading article in the same journal urging the immediate carrying out of the entire scheme I have proposed to attain this result. I am not surprised that you have referred at length to the "ethical issue" involved when "a complicated technical question is made the subject-matter of a referendum to the general public. ..... The efforts ought to be discountenanced of those who seek to persuade the public to take upon itself the responsibility of selecting this or that technical method for the achievement of an end however desirable." I am in entire accord with the sentiment prompting these statements. In a country with an ideal government and with an ideal War Office such action would be unnecessary, as the scheme I have proposed would have been an integral part of army organisation two years ago. But we are not dealing with an ideal form of government and few would claim ideality for our War Office.

You advocate that the leading principle of military policy by which "officers are debarred ..... from bringing the pressure of public opinion to bear upon the adoption of this or that strategical plan ..... should be applied to the strategical methods of preventive medicine in the army." I have shown elsewhere that the inducements to officers in the medical department of the army to accept the *status quo*, however behind the times that status may be, are quite powerful enough to prevent such officers actively urging any policy of advance, unless such policy is certain to meet with no resistance. Had I been Medical Director-General of the army in August, 1901, nothing would have induced me to urge a scheme already pronounced by the representative of the War Office in the House of Commons as "entirely impracticable for active service," though as a private individual such considerations (which in your opinion, Sirs, should be of "universal obligation") could not influence me in the slightest to depart from the resolution to urge repeatedly the scheme until its adoption, having previously satisfied myself that the reasons alleged for "impracticability" were trivial and easily surmountable. It was due directly to persistence in this policy that nine months later Mr. Brodrick stated in the House of Commons (May 6th, 1902): "The principal medical officer reports that the enteric cases mostly come from the columns. ..... In camps and stationary garrisons steps have been taken to have the water boiled and special officers selected to deal with the sani ary work of the district and the outbreak of disease. For mobile columns a scheme for providing safe water to fill the soldiers' water-bottles at all times has been prepared and measures are being taken to carry this out." Thus within nine months the "entirely impracticable" was carried out with complete success for half the army in which it was adopted, and was on the point of application to the whole quarter of a million men engaged.

The solvent for the "impracticable" was the moving force of public opinion stimulated by the press. That such would be regretted in an ethically perfect State I quite concur, but such is not England, and England was at war, losing heavily from preventable causes. It was necessary "to seek to persuade," *not the public, but the responsible army administrators in the presence of the people*, "to take upon itself the responsibility of selecting this or that technical method." Experience had previously shown me that it was the only method these authorities recognised. An early, definite, strong conclusion of the medical press on the merits of the scheme might have modified the venue of the discussion. The public has not been asked by me to express any opinion on the merits of this particular scheme or to decide any point on "this or that technical method." The appeal to the public is on the point that "the conduct of this question during a period of

three years does not reflect credit on those concerned, especially the civil and military heads of the War Office."

The public attention has been drawn to the three aspects of the question:—

1. *The medical aspect.*—I have shown them that in every case where large camps, military or civil, have placed themselves under a scheme of sanitation only distantly approaching the completeness of that which I have proposed these camps have been practically exempt from these evils. This statement the public accepts on my authority as a Doctor of Medicine. If this statement should be incorrect scientifically I shall be glad if you will correct it.

2. *The military aspect.*—I have pointed out to the public that the consideration of this scheme in its military aspects—transport, efficiency, discipline, &c.—has resulted in the unanimous support of a large number of military experts representing all branches of the army two years ago at the Royal United Service Institution and that the scheme has the continuous strong support of leading military journals and many prominent soldiers.

3. *The disciplinary aspect.*—The possibility of educating every man in the army up to the point of keen interest in every detail of the scheme. Practically every journal in the country has expressed confidence in the power of the scheme to attain this end. This aspect of the scheme is essentially one to be decided by the public at large.

Having considered these three statements, or aspects, the public are asked to express strongly their determination that they insist upon the principles of prevention which guide civil authorities being applied immediately to the army without further delay.

The particular question before us is the propriety of the *Times* publishing my letter and commenting upon it, which naturally follows on the impropriety of my writing to the *Times*. Seeing that the subject has already been fully discussed in its medical aspects before two important medical bodies and in numerous articles, in its military aspects before the chief military institution for technical discussion of military subjects, and in its disciplinary aspects by the entire press of the country it seems amazing that the *Times* should be incompetent to review the position after these discussions. Such an assumption—naturally excluding from the columns of that journal discussions on every branch of technical science, medical, legal, military, naval, agricultural, clerical, or fiscal—however desirable in an ideal State, would be a manifest disaster to this country, governed, moved, and animated as it is by public opinion. I am of opinion that in these circumstances to have assumed, as official experts once did, that there was no remedy for these evils and to have palliated by silence the delay of the War Office in applying suitable remedies would have been a public wrong on my part and on the part of the press, military, medical, or lay, if it had been tempted to this course.

Leaving the ethical for the technical considerations suggested by your article, your article assumes that I have "attributed a too exclusive influence to water-borne contagion, whilst overlooking the risks which attend direct contact with the infected excreta." In the letter to the *Times* referred to it is expressly stated that I 'insisted upon the necessity of a 'pioneer section' specially trained in methods of camp sanitation" and at the Medical Society of London last year I stated in reply to the discussion on my paper that "I regarded no system of camp sanitation which dealt only with protected water as satisfactory unless every other avenue of typhoid fever—flies, dust, contagion, &c.—was also closed." A system which in addition to protected water required also a special service[1] organised and trained in the prevention of infection through polluted soil, latrines, &c., insisted on minute attention to details of cleanliness by the men, required also the rapid isolation of all cases of intestinal disease or suspected cases of typhoid fever with the sterilisation of their excreta, clothing, tents, &c., can hardly be regarded as a limited view of the etiology of typhoid fever or as "overlooking the risks which attend direct contact with the infected excreta."

I am therefore in full accord with you when you state that "it would be ill-advised to place any confidence in a plan of campaign against typhoid fever which concentrates the attention upon the prevention of indirect contagion by polluted water and which takes little account of the formidable dangers of direct fæcal contamination." Such a plan of campaign I am totally unacquainted with and bears no resemblance to the scheme I have proposed. It is true that the part of my scheme dealing with protected water has been given special prominence as practically all the difficulties of the scheme centre round the rapid continuous service of sterilised water to vast bodies of men, and without this difficulty being overcome no scheme of sanitation is imaginable. I am not aware that the work of Professor Koch in the infected villages of the western frontier has revealed any new avenue of typhoid fever to armies that has not been fully considered and provided for in the scheme I have proposed. Three years' study of this subject with actual practice and entire success in the prevention of the diseases referred to in large bodies of men and in communities previously badly infected has shown me that the knowledge already exists for effective preventive technique, without any "consensus of expert authority" (which could be produced in abundance if required) or without any further delay in favour of "continuous research."

I am, Sirs, yours faithfully,

Sept. 21st, 1903 LEIGH CANNEY, M.D. Lond.

[1] Royal United Service Institution, November, 1901. Medical Society of London, October, 1902. Times, Sept. 1st, 1903.

A MANUAL OF MEDICINE.

To the Editors of THE LANCET.

SIRS,—While heartily thanking you for your careful examination and very kindly criticism of my "Manual of Medicine," I may perhaps be allowed to comment upon the two points with regard to which my accuracy or my judgment is called in question. The sentence in which reference is made to enteric fever and tuberculosis does possibly err in the direction of dogmatism, but so far as the prolonged febricula of childhood is concerned I range myself with those who regard it as being actually enteric. As to fixing a definite period of quarantine for all cases which are convalescent from a given infectious fever the general practitioner who tries it, say, in scarlet fever, is likely to find before long that the task is beyond his strength. The difficulty, first of ascertaining the minimum safe period, and secondly of enforcing it in a mild case in an adult, goes far to explain the fact you note—namely, that the question is not generally dealt with in the text-books. With medical officers of schools the matter is very different, but they have the recommendations of their own association to guide them. The opinion of THE LANCET, however, will be borne in mind.

I am, Sirs, yours faithfully,

Glasgow, Sept. 21st, 1903. T. K. MONRO.

A CASE OF MALIGNANT DISEASE FOLLOWING SPLENIC ANÆMIA.

To the Editors of THE LANCET.

SIRS,—The case recorded in THE LANCET of Sept. 19th, p. 813, under the above heading is of interest from a clinical and diagnostic point of view, but until Dr. C. H. Sedgwick gives further evidence to uphold his diagnosis he surely cannot expect any great acquiescence in his conclusion that the malignant disease in this case supervened on splenic anæmia. One is at a loss to discover what peculiar symptoms in the course of his patient's illness and what results from blood examinations or from post-mortem examination lend any support to this expression of diagnostic acumen. The case, I take it, from the excellent notes provided, was probably one of primary malignant disease of the liver. The enlargement of the spleen with diminution in its size after a bleeding, the hæmatemesis, and the melæna are but the common evidence of a somewhat acute portal obstruction situated in the liver and caused by rapidly progressive malignant disease of that organ. The reports of the blood examinations support only the diagnosis of severe hæmorrhage and the venous congestion of the spleen explains its size and post-mortem appearance. The morbid physical signs and symptoms displayed by Dr. Sedgwick's patient can most simply and amply be explained by such a diagnosis as I offer, and certainly there is nothing in the case as reported to support the very haphazard one of splenic anæmia.

I am, Sirs, yours faithfully,

Edinburgh, Sept. 19th, 1903. GEO. S. CARMICHAEL.

POST-GRADUATE WORK ABROAD.

II. BERLIN.[1]

(FROM OUR OWN CORRESPONDENT.)

BERLIN is becoming more and more the favourite resort of medical men, both Germans and visitors from foreign countries, who are desirous of increasing their medical knowledge by attendance on additional courses and lectures. Formerly Englishmen and Americans who went abroad for the purpose of continuing their studies betook themselves for the most part to Paris or Vienna, but for about the last 20 years Berlin has to a great extent taken the place of Vienna. In both cities the supply of clinical material is very abundant and the teachers enjoy a well-merited reputation. Berlin, however has the advantage of possessing hospitals and laboratories which are hardly equalled elsewhere and on which enormous sums have been expended during recent years. Of the other continental capitals there are few, except Moscow, which contain such fine hospital buildings as the Royal Surgical Clinic, the Obstetric Institute, and the new clinics of the Charité Hospital, or such medical institutions as the Pathological Museum, the Physiological Laboratory, and the Laboratory for Infectious Diseases. In addition to the various laboratories and clinics belonging to the University there are the great municipal hospitals—namely, the Friedrichshain Hospital, the Urban Hospital, and the Rudolf Virchow Hospital, the latter of which is in course of construction and will cost about 14,000,000 marks (£700,000). These hospitals may be visited all the year round and among the junior assistants there are almost always some who speak a little English and are willing to act as guides to English visitors. Berlin has also excellent private clinics and sanatoriums constructed and managed in accordance with the most modern principles of hygiene and asepsis. Among these may be mentioned the clinic of Professor Landau, the well-known gynæcologist, the sanatorium of Dr. Kante, and other similar establishments which are also accessible to foreign medical men desirous of seeing the premises or of witnessing operations.

For those whose object is to do more than to pay a short visit to Berlin and who have gone there with the intention of entering on regular study two ways are open. The first way is to matriculate as a medical student. Those following this system have the advantage that they may attend lectures and clinics of all the celebrated professors of the University, such as Professor von Bergmann, Professor von Leyden, Professor Waldeyer, Professor Senator, and others who are not engaged in post-graduate instruction; moreover, the regular lectures and clinics of the University are somewhat less expensive than the post-graduate courses, which are exclusively private undertakings. It is, however, a drawback that medical men matriculating as students have to spend at least one semester in Berlin—namely, either the winter semester from the end of October to the end of February or the summer semester from the end of April to the end of July. The winter semester, which is the longer of the two, is the preferable one, because in the summer semester less work is done owing to the great heat which often prevails at that season in Berlin. Foreign medical men desirous of matriculating must arrive at least one week before the end of the vacations; they must apply at the office of the secretary of the University and produce certificates showing that they are either already qualified medical men or that they are entitled to study medicine according to the laws of their respective countries. When their certificates have been found to be in good order a day is assigned to them when they have to appear before the rector of the University and the dean of the medical faculty for the purpose of matriculating and swearing obedience to the University statutes. The matriculation fees are very moderate, but for every lecture, practical course, and clinic which is attended a separate fee, which in most cases is 40 marks (£2), has to be paid at the "quaestur" (treasury) of the University. It is advisable before travelling to Berlin to get the official list of the University lectures and courses of instruction, for in this way a foreign visitor may form an idea at home as to which lectures and courses will suit him. This official list is published in a Latin edition and in a German edition twice a year before the commencement of each semester; it may be obtained from Messrs. Speyer and Peters, university booksellers, W. 43. Unter den Linden, and from other booksellers as well. It must, however, be remembered that this official list contains only the lectures of the University staff—i.e., of the professors and the *privat docenten*—while the courses of instruction conducted by other medical teachers, as, for instance, by the assistants in the clinics and laboratories, may be found either on the notice board (schwarzes Brett) at the entrance of the respective institutions or in the advertisement columns of the leading medical journals.

Medical men unable to stay a whole semester in Berlin have to follow a different system. They have to attend the special post graduate courses which on an average are of one month's duration. Post-graduate courses have been for a long time a feature of almost every German university, and especially of Berlin University. Although some courses are delivered nearly all the year round by certain teachers, the proper seasons for post graduate study are the month of March and the month of October during the University vacations, when the great majority of the students are away. A syllabus of systematic courses and lectures to be delivered during these two months has been drawn up by an association which has Professor Hirschberg, the well-known ophthalmologist, as its chairman and consists almost exclusively of extraordinary professors, *privat-docenten*, and assistants of university teachers. This association is strictly private and has no official connexion with the University, but is nevertheless permitted to make use of the clinical material and the laboratories of the University. These courses of the Docenten-Verein für Ferien-Kurse (Association of University Teachers for the Delivery of Vacation Courses) are essentially practical so as to meet the needs of medical practitioners. In them every branch of medicine is represented. The last syllabus of the association included 21 courses and lectures on normal and pathological anatomy and histology and on bacteriology, one on physiology, 43 on clinical medicine, eight on diseases of the brain and nerves, ten on surgery, six on diseases of the eye, 12 on otology, 11 on rhinology and laryngology, ten on gynæcology and obstetrics, four on diseases of the skin and syphilis, five on diseases of the genito-urinary system, seven on forensic medicine and hygiene, and one on radiography. The delivery of certain lectures begins early in the morning and some are held late in the evening, so that a very industrious man may spend the whole day in attending them. Though the ordinary professors of the University for the most part abstain from delivering post graduate courses, the list of teachers, nevertheless, includes a great many well known names, such as the extraordinary professors Ewald, Brieger, Baginsky, Rosenheim, Eulenburg, Landau, Nitze, and others. Medical men desiring further particulars should apply to Herr Melzer, secretary of the Docenten-Verein für Ferien-Kurse, Langenbeck Haus, N.W. Ziegelstrasse, Berlin. From Herr Melzer they may obtain a detailed list of the lectures and courses of the association, showing the time, the place, and the fees of each course. The fees for most of the lectures are 40 marks (£2). No formalities whatever are required from those attending post-graduate courses, they have only to apply at the office of the association in Langenbeck House (it is open about a week previously to the beginning of the lectures), to purchase a ticket for each course which they desire to attend, and to hand the ticket to the lecturer or teacher in question. The present series of lectures will open on Sept. 28th and will end on Oct. 24th. In addition to the lectures of the association there are a good many other courses and opportunities of obtaining instruction all the year round; especially for those desiring a thorough training in bacteriological work ample facilities are afforded in the numerous private bacteriological laboratories, in which case the terms would have to be arranged with the management. Courses in bacteriology together with laboratory practice are given in the University Institution for Hygiene; the hours of work are from 9 A.M. to 3 P.M. from Nov. 25th to Dec. 20th. Another course in bacteriology of three months' duration is delivered at the Royal Institution for Infectious Diseases, beginning on Oct. 1st, from 9.30 A.M. to 3.30 P.M.

Some knowledge of German is necessary for those desiring to profit fully by the opportunities afforded in the clinics and lectures and previously to beginning study in Berlin lessons in German should be taken. Board and residence in Berlin

[1] No. I. (Paris) was published in THE LANCET of Sept. 12th, 1903, p. 781.

are on an average cheaper than in London; admission to entertainments such as concerts and theatres may be obtained at prices which are very moderate when compared with those in London. The boarding-house system is not so much resorted to in Berlin as in London. There are, of course, a good many pensions which have some advantages for persons who are not very conversant with the German language; the majority of students and those who are attending the post-graduate courses, however, do not live in pensions but generally take their meals in restaurants. Suitable rooms may be found in the Quartier Latin which is in the vicinity of the University clinics and laboratories. A passport, though not indispensable, is nevertheless useful and may be instrumental in saving much trouble; registered letters, for instance, are not delivered to unknown persons unprovided with means of identification. In conclusion, I may state that there is no foundation for rumours which have been circulated to the effect that in Berlin there is a feeling of hostility against English visitors; it may also be added that the medical profession of the city will be much gratified by their English *confrères* more frequently undertaking the journey to Berlin. I shall be happy to give in the pages of THE LANCET any further information which intending visitors may require.

THE ELEVENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

THE THIRD SECTION.

WHAT in England is termed sanitation was certainly best represented by the third section and it was here more especially that the British members made their presence felt. The first question discussed related to the treatment of sewage and on this a report was presented by Dr. SAMUEL RIDEAL, Vice-President of the Society of Public Analysts, London. Dr. Rideal said that modern practice in England and America was in harmony with the opinions which he put forward a few years ago and which he could now summarise as follows: (1) That tanks for preliminary treatment, preferably bacterial and anaerobic, are essential for the successful removal of fats from, and the production of ammonia in, sewage; (2) that percolating filters with continuous admixture of air are more economical and efficient than contact beds for the subsequent oxidations including nitrification; (3) that denitrification finally improves the effluent and that this part of the process is more rationally conducted in a lagoon or water course than confused with the nitrifying process in expensive contact beds; and (4) that it is impossible without expense to sterilise the effluents of sewage works, and that it is more practical to purify drinking water, oysters, water-cress, and the like, immediately before consumption.

M. F. LAUNAY, engineer in the service of the Paris municipality, dealt in his report at great length with the various modes of bacterial treatment and his conclusions were to a large extent imbodied in the motion which the section adopted and which was worded as follows:—

> The divers processes for the biological purification of the sewage of towns and the waste waters from manufacturing or industrial establishments are connected with all the general principles the application of which opens out a new and fruitful era in regard to the sanitation of towns and of watercourses. Whenever engineers, hygienists, manufacturers, or municipalities have to deal with the problem of the purification of sewage and waste water from factories, &c., they should seek inspiration from the above processes and may derive considerable benefit therefrom, and this whether they employ new bacteriological processes by themselves or whether they associate them with other processes that are already known and applied.

On the second day the old and vexed question of the combined or the separate system of drainage came on for discussion. Nothing could more forcibly illustrate the progress made in sanitation than the discussion on this problem. 15 or so years ago it was the burning question and at Paris in 1889 there was quite a battle over the matter. Even at Madrid in 1898 there was not the suavity, the give-and-take tone which at Brussels showed that the hatchet was buried and that both camps had learnt to respect each other. Now the warmest advocates of the mixed system admit that in certain localities it is preferable to have a separate system and not to allow the rain water to penetrate into the sewer. On the other hand, the most intolerant partisans of the separate system are now prepared to agree that where there is a very good fall it is not necessary to have a separate system. Even mechanical contrivances, such as pneumatic suction or pressure, are no longer anathema and consigned to perdition, and the section was well-nigh unanimous in recognising that the Lienur, Shone, or Berlier systems had, after all, rendered considerable service. This billing and cooing between ancient and somewhat bitter and bigoted adversaries was certainly one of the most novel and remarkable characteristics of the Congress. M. E. PUTZEYS, engineer of the Brussels waterworks, recalled in his report on the subject that at the first international congress which met at Brussels in 1852 Mr. Edwin Chadwick and Mr. Ward alluded to the services which the modern water-carriage system might render, but what they said was so absolutely opposed to the feelings of the day that they met with a cold reception. From 20 to 30 years had elapsed before the water-carriage system of drainage, the *tout à l'égout*, was generally recognised to be preferable to cesspools and other systems which allowed crude sewage to stagnate. After another 20 or 30 years, while the "all to the sewer" is still maintained to be the best solution of the problem, it is now allowed that it may occasionally be expedient to have two sewers, one for rain water and one for sewage proper. Further, and as a concession which was still harder to obtain, it is now recognised that for the latter sewer mechanical means may be employed to insure a flow at a self-cleansing velocity. This velocity, M. Putzeys says, should be not less than 70 centimetres per second in large sewers and 80 centimetres per second in small-pipe sewers. Nor is velocity alone needed, there must be depth as well, otherwise the solid particles floating in the water will be attracted to the walls of the sewer. Now a sewer may be built of the right size to carry away the 150 or 200 litres of water per day and per head of the population which represent the general amount of sewage, slop water, and waste produced by a town population, but this amount is only as 1 to 40 when compared with the rainfall; also the rain brings a great deal of sand, earth, grit, and other solids that do not move forward easily in a sewer but form deposits. These are the conditions that have suggested the advisability of the separate system. Mr. ALFRED ROECHLING, who was for a considerable time borough engineer at Leicester and whose works on drainage are so well known, was also one of the reporters on this question; he likewise protested against any dogmatism and pointed out that both the combined and the separate systems had their advantages. Mr. Roechling's report concluded with these words: "It may appear to the uninitiated that the separate system possessed *a priori* undoubted advantages in simplicity and cost over the combined one, but it is hoped that the foregoing observations will fully demonstrate that such a conclusion may prove very illusory and that a correct judgment is only possible after, in each separate case, the two systems have been fully compared from all local sanitary and economic points of view."

In the course of the discussion on these reports it was pointed out that the tendency was to bring water to a town without thinking how the water was to be got out of the town. It was imagined that when once this water had been befouled it would prove useful to agriculture. Experience had shown that there was no profit but considerable cost. M. PUTZEYS said that at Paris in 1889 the Congress declared that the separate system was only to be employed in exceptional circumstances. He now claimed that the two systems stood at least on a footing of equality. Of course, the separate system did not necessarily involve the employment of machinery to raise the sewage. Mr. ROECHLING, speaking after M. Putzeys, pointed out that the separate system had been used in England since 1840. The late Mr. Chadwick had said "rain to the river and sewage to the land"; how could this be realised otherwise than by a separate system? But there were places where the separate system would cost more than the mixed system and in most cases the latter had been adopted. He did not denounce either system: both were good and the selection would depend on local considerations.

His Excellency Dr. WILDE, ambassador in Brussels of the Argentine Republic, then made a very interesting speech. He argued that before dealing with the method of drainage it was first necessary to decide what would be done with the sewage when once it had been got out of the town. At Buenos Ayres they used to have a very high mortality and frequent

epidemics. In 1891 some 3000 people died from yellow fever. Thereupon they started building sanitary works and this was done on a colossal scale. But every detail was planned out before anything was attempted. There had been no patchwork. They took their water up stream and under the river La Plata. Here it was half filtered and very fresh. Then they had clarifying and filtering beds and pipes delivered the water into the highest houses. They could supply 90,000 cubic metres per day. They had several systems of sewers and with a possible rainfall of 33 millimetres in an hour the largest and nearest overflows into the river were necessary. But the sewage proper passed under the river and went to a distance of 10,000 metres where there was a separation chamber and heavy matter was excluded. Pumps then sent the sewage 1500 metres further to a point in the river where the water was at a lower level than the town and the sewage could not travel back to the town. As a result of this great undertaking not only had the general death-rate been reduced by half but some diseases had altogether disappeared. People had gone to the town with yellow fever, cholera, and plague but they had not spread these diseases among the population.

M. CHARDON then explained that the (I believe somewhat modified) Berlier system was applied in the Paris suburb of Levallois-Perret. They had 35,000 metres of iron piping and adding the house connexions about 50,000 metres in all. This worked day and night without a moment's interval and the experiment had now been going on for ten years. They took all except rain water and this for a population of 60,000 people. The pumps drew the air out of the pipes as well as the water but they found in practice that it was easier to draw up water than air, and therefore, though they had only undertaken to drain the closets, they were now taking the slop water and house waste water as well. He concluded by arguing that mechanical processes did not differ from, but in many cases formed a necessary part of, the separate system.

Mr. WILKINSON, C.E., of Manchester thought that rain to the river and sewage to the purification works would be the ideal. But they were constantly met by the question of expense. As it cost some £2 10s. to purify 1,000,000 gallons of sewage they must limit the volume of sewage. On the other hand, in the absence of the rain water to flush the sewers better gradients would be required, and as these cannot always be obtained it meant a more extensive use of mechanical processes such as had been described. But the separate system could not so readily be applied to overcrowded and dirty courts and alleys. Here the rain water was not so great in proportion to the number of inhabitants and it was particularly foul. A small shower would send water as foul as sewage to the sewer. Here the combined system was best.

After several other speeches M. BECHMANN, chief engineer connected with the administration of the city of Paris, brought the discussion to a close. He remarked that the period of combat had ceased. In 1889 they were in full fighting trim. He had good reason to remember and to know, for he then presided over the sittings of the section. The majority was then, perhaps, too emphatic. But they were troubled by inventors who sought to impose their methods as the only possible solution of the difficulty. Those who had applied the old system as recognised by their revered master, Mr. Chadwick, were not to be upset by these patent and untried systems. To-day they had quieted down and the old disputes had had a fine educational result, so they were now told not to decide absolutely in favour of one or the other but to keep an open mind and to be led by local circumstances. Thus it was very easy for Mr. Wilkinson to talk of draining into the sea, but they did not all live in an island and what could be done for many English towns but few German towns and no Polish town could attempt. M. Bechmann proposed a motion which he thought would unite all parties. After a little further discussion and some verbal modifications the motion was carried in the following terms :—

> The separate system and the combined or mixed system can each be usefully employed, according to the circumstances of the case. It is only after both methods have been carefully studied and compared in each particular instance and when the advantages and the inconveniences of the systems as applied to the local peculiarities have been submitted to full examination that the sanitary engineer will be able and will be justified in attempting to formulate conclusions.

This resolution, it will be seen, gives satisfaction to both parties and was carried unanimously.

Something of the old combativeness that used to distinguish this section revived over the next question. It related to gathering grounds, but especially to deriving water from the chalk for drinking purposes. M. JANET, a French mining engineer, thought that water should only be taken from the chalk when it was absolutely impossible to get it from sandy soils. Then M. E. A. MARTEL of Paris condemned water from the chalk very energetically. Now a great many towns and water companies derive their water from the chalk and therefore these assertions were challenged, and a very prolonged and at times heated debate ensued. Many Belgians were particularly excited over the matter, as the very extensive works which supply the communes that surround Brussels derive their water from chalk formations. A paper by Mr. KENDAL, of the London Geological College, was read describing how the question stood in England and M. VAN DEN BROECK thought the State should be able to give small districts technical scientific advice on such difficult questions. Dr. PAGLIANI explained that in Italy the water was frequently taken from the chalk and these waters were often not so hard as might be expected. From the bacteriological point of view they were remarkably pure. To condemn such waters would be to deprive, and this without sufficient grounds, a large portion of the population of their present water supply. On the other side it was argued that chalk soils were apt to crack and that foul water could run down these fissures and thus escape the filtering action of the chalk. The evidence also in regard to the waters actually in use was contradictory, for in some cases the best reports were made and this was not the same in regard to other districts. Mr. ROECHLING insisted on the great variability of waters from the chalk. He thought they should be treated with suspicion till the contrary was proved and urged the importance of the effect likely to be produced by a vote of the section on such a subject. Three sittings were devoted to debating this one question. Then followed more testimony in favour of water from the chalk, notably that drunk at Liège and at Mons. Others strove to reconcile both parties and finally the section carried the following motion :—

> The supplies of water from chalk soils should be carefully watched, because the filtration of such waters may be faulty in consequence of the fissures that may occur in the soil. The water-supply service being established measures should be taken constantly to watch not only the water itself but the gathering ground whence the water is derived.

Of course everybody and whatever his opinion was able to vote in favour of this motion. Who would vote against watchfulness ?

The next subject was an important and interesting report drawn up by the international committee on the hygiene of the street. The authors are Dr. ICHMID, chief of the Sanitary Services of the Swiss Republic, Dr. BOHM of Berlin, Dr. POLAK of Warsaw, Dr. PAGLIANI and Dr. TEDESCHI of Turin, and Mr. ROECHLING. The discussion was opened by representatives of Berlin, Brussels, and Hamburg, who described how in these towns the streets were swept, the snow was removed, the household refuse was destroyed, lavatories were provided, help for the sick and wounded was organised, and gave other such information. M. DE KONTKOWSKY (Russia) insisted that none of these public services should be intrusted to contractors or private companies. He believed that destruction by fire was by far the best process for dealing with refuse and had a good deal to say in regard to the iniquity of building houses on ground made up of unpurified town refuse. Dr. PAGLIANI spoke in eulogistic terms of the refuse destructor of Brussels, which many members of the section had made a point of visiting. Amid applause he proposed to congratulate the administration of the town upon the progress they had realised in this respect. M. VANDERPERK of Rotterdam agreed, but thought some means should be taken to remove the ash and other incombustible substances before putting the refuse on the destructor furnace. A great number of minutiæ were debated during the greater part of two sittings, all in regard to the control and cleanliness of streets. At last the section carried a motion congratulating the international committee on the good work that it had done and agreeing with the conclusions of its report.

The section now began the debate on the last subject—the warming and ventilation of dwellings. At first the discussion was devoted to warming apparatus and the prevention of over-dryness or of overheating the air. On these points considerable improvement had been achieved but no such progress had been accomplished in regard to ventilation. At the same time the use of electricity as a motive force would certainly render great service. Then, again, with the aid

of compressed air it was possible to tell the temperature of different rooms which were some distance away and they could be controlled by one person in attendance. On the last day on which the section met the matter of ventilation was taken in hand and M. BECK argued that nature must be helped in every way; that vitiated air was hot and therefore went up and consequently should be extracted from the upper part of the rooms. He did not think that in practice any account was taken of the varying amount of air required according to the number of persons in the room. Other speakers did not agree and thought that the air should be drawn out by the nearest road and it was sometimes advantageous to mix the heated and cold air above and to let it down slowly on the people below. M. DELLEUR described a case of poisoning due to the pipe of a stove. Where a slow combustion furnace was employed it might be dangerous for the chimney to pass up in the hollow of a bedroom wall. The walls were porous and the carbon monoxide could pass through them into the dwelling or bedrooms. He thought that warming apparatus should, as far as possible, be placed in the hall and passages rather than inside the rooms. M. HEYNIEUX explained that in Belgium the Minister of Public Works had appointed a commission to draw up rules in regard to the conditions that should be imposed in all installations for warming dwellings. The Government itself was building important structures and the solution of the problem for warming and ventilation had been made the subject of a competition. Mr. ADOLPHE SMITH described the advantage of ventilating downwards which had been realised at the Bourse of Havre and this after upward ventilation had been tried for some years. It was not possible to dogmatise on the matter. Whatever the system might be it was possible to ventilate public buildings, theatres, &c., because there would probably be enough money forthcoming to make the attempt. This was not the case in regard to private houses, and Dr. J. F. J. Sykes had given evidence that in England the authorities proclaimed their failure to solve the problem. They insisted on through ventilation. In other words, the rooms were to be purified occasionally by creating such a draught as to render them uninhabitable. This was a clear indication that when inhabited they were insufficiently ventilated. To ventilate properly the inlets must be so extensive that the quantity of air entering will be so great and will spread over so wide a surface that it need only move slowly and imperceptibly to change the air of the room. Dr. T. Glover Lyon in London had thus ventilated one small room, but it cost him more than £100. The first thing was to find out how to perfect ventilation at whatever cost and this it appeared had been done. Now this laboratory experiment had to be converted into a commercial reality by discovering the means of bringing about a very large reduction in the cost. Dr. PAGLIANI recalled the theories so eloquently exposed by M. Emile Trélat at previous congresses, for he spoke of cold air and hot walls. The section then adopted a motion thanking the reporters for their communications and passed on to the more general consideration of the internal condition of dwelling-houses. Dr. SYKES explained how in England a certain reduction in taxation was accorded to dwellings let out as flats if they were built in harmony with the more advanced principles of hygiene. He insisted that in these dwellings the staircase should be in the open air otherwise all the dwellings would be connected atmospherically with one another. Diseases then spread rapidly from one household to the other. The following motion was finally proposed and brought the discussion to a somewhat unsatisfactory conclusion:—

The section, recognising the importance of the points raised and the interest of the communications made, without being able to arrive at any definite conclusions expresses the desire that these questions shall be placed on the agenda of the next Congress.

There now followed a series of papers presented by individual members of the section that were not part of the programme. First among them was an interesting communication on slaughter-houses by Dr. J. POLAK of Warsaw who was careful to insist that they should be large enough to meet the demands of growing populations. Other speakers read papers on special systems for purifying sewage and M. DE TOBIANSKI showed how the smoke from chimneys might be caught and utilised. Finally, M. DE KONTKOWSKI rose and declared that the section had accomplished a great deal of work and suggested that they should conclude by voting hearty thanks to their President, Lieutenant-General Docteur. This proposal was enthusiastically adopted and the labours of the section came to an end.

THE SIXTH SECTION.

This was known as the administrative section, for it dealt with several questions where the intervention of the authorities, either local or central, is indispensable. Here, then, a large number of the official Government delegates congregated. On the first day the question of the care of infants was discussed and Professor BUDIN of Paris contributed an interesting communication on the feeding of infants. At his suggestion the section adopted the following motion:—

That in the opinion of the section the feeding of infants should be a matter of constant solicitude on the part of the authorities and the section expresses the desire:—

That public charitable administrations should strive by all possible means to institute dispensaries directed by medical men for infants.

That young women having terminated their primary education should, more especially in schools of domestic economy, receive practical lessons on infantile hygiene, notably by making them attend at the dispensaries for infants.

That in all the communes notices should be prepared on the question of suckling and the hygiene of the newly born. Such advice should be headed with the maxim that no artificial method of feeding can possibly equal in value milk from the mother's breast. These notices should be distributed at marriages and at the registration of newly-born infants.

The next question which occasioned great interest related to the public measures that could be taken to check the spread of tuberculosis. Professor BROUARDEL was one of the reporters on the subject and he also spoke urging that the most effective of all measures was to provide the working classes and the poor generally with more wholesome homes. Till this is done on a much larger scale than at present the Governments must create or subsidise sanatoriums. Dr. MOELLER of Brussels discussed the means of killing the tubercle bacilli and thought that the prevention of drunkenness would materially help to check the spread of tuberculosis. Dr. PANNWITZ of Berlin, general secretary of the International Bureau on Tuberculosis, also agreed that the great object must be to prevent poverty, whether it be by compulsory insurance, coöperation, or any other means.—Dr. SCHMID, director of the Sanitary Bureau of Switzerland, considered that notification should be compulsory and that the public authorities must take action in place of private charity or enterprise when the latter were inefficient. Dr. SANTOLIQUIDO, director at the Ministry of the Interior of the Sanitary Services for the Kingdom of Italy, thought that the establishment of sanatoriums was a matter of but secondary importance. It was difficult to tell whether they were of any use from the prophylactic point of view. But it could be irrefutably proved that wherever great sanitary improvements had been effected there the mortality from tuberculosis decreased. Professor CALMETTE of the Lille Pasteur Institute was of opinion that the State should set the example in creating sanatoriums. He was also in favour of compulsory insurance so as to check poverty which was the basic predisposing cause. Other speakers argued against the sanatoriums, regarding them as a red herring drawn across the path of sanitation which was the true remedy. Dr. A. NEWSHOLME of Brighton gave some account of what had been done in England and was followed by Dr. J. F. J. SYKES, medical officer of health of St. Pancras, who showed an excellent diagram illustrating how the death-rate from tuberculosis had fallen both in England and Germany when energetic general sanitary measures had been applied. M. FUSTER explained that in Germany many things were possible since the system of compulsory insurance had provided some £40,000,000. Other countries must find means of raising similar sums. Professor JACOB of Berlin said that the cost of the sanatoriums in Germany was compensated by the work of the number of persons whom they restored to active life.

Subsequently the discussion degenerated more or less into a contest, especially among the French members, between the partisans and the adversaries of sanatoriums. Eventually, however, the section adopted unanimously the following resolution:—

1. The prophylaxis against tuberculosis is more especially the duty of the public authorities by means of a rigorous application of the laws and by regulations concerning the salubrity of habitations; by means of the police sanitary measures prescribed by the laws; by means of severe legislation on over-pressure and the duration of the hours of labour (in regard to which it is very desirable that there should be an international agreement); and finally by extending the communal, cantonal, or district by-laws which should be inspired by the local necessities and the interests of the benefit societies and trades.

2. With regard to the assistance given to tuberculous patients by the popular sanatoriums, the dispensaries, the out-of-door treatment, the asylums, &c., the State should favour and aid in the largest measure possible private initiative and social associations, the departments, provinces, communes, philanthropic and labour associations, benefit

societies, &c., and allow them to do what good they can according to the social aspirations and necessities that characterise each nation.

5. That the State should encourage by all the means at its disposition societies which provide cheap dwellings, cooperative distributive societies and temperance organisations.

The next question raised was that of quarantine and plague. Professor CALMEITE declared that quarantine was quite out of date. The real question was that of the rats and the fleas from the rats. The old-fashioned quarantine did not keep the rats away. Dr. NOCHT of Hamburg said that sulphur did not kill all the rats but it spoilt the flour, tobacco, and tea on board. He preferred oxide of carbon. A very interesting and important discussion ensued during the course of which the big passenger ships were described as cosmopolitan floating cities. It was urged that there should be a medical man on board with a qualification internationally recognised and that he should be absolutely independent of the owners of the ship.

The inspection of schools was the next subject which came up for discussion and the section carried a lengthy resolution demanding the medical inspection of all schools. But this inspection should not be limited to questions of sanitation and health; it should also deal with the physical aptitude of the pupils and the harmonising of these physical conditions with the teaching given.

The question of the housing of the poor and the reports prepared on this subject were taken on the morning of Sept. 5th. It was maintained that the State should reduce the taxation and the law the cost of transfer when property was acquired for the purpose of providing cheap and wholesome homes for the poor. Nothing of the sort has been done in France. But the new French Public Health Act of Feb. 15th, 1902, compels the local authorities to take measures in regard to the sanitation of such dwellings. On the other hand no regular sanitary service of inspection has been organised. According to Dr. H. ALBRECHT of Berlin there is not in the German empire any special law on the housing question. He thought that it was by constant inspection and police regulations alone that an improvement in domestic sanitation could be obtained. The German local authorities had the power to establish by-laws determining how dwellings should be constructed. It was necessary to encourage the State and the local authorities to build artisans' dwellings and the money accumulated by the insurance funds could be utilised for that purpose. Professor MAHAIM of the Liège University was also in favour of the construction of dwellings by the local authorities. The Belgian law of 1889 gave some fiscal facilities to workmen's building societies and allowed the advance of funds to them from the State Savings Bank. Some 30,000 houses had thus been built and they provided homes for 2 per cent. of the population. In regard to sanitation, the burgomaster had the right to close any unhealthy house but in many districts he rarely exercised his power. Compulsory legislation on this subject was needed. Dr. RUYSCH explained that in Holland there were inspectors to visit the houses; the local authorities were forced to make rules for their construction and had the right of expropriation for the purpose of constructing artisans' dwellings.

In the afternoon Mr. A. E. FRANKLIN, delegated by the Mansion House Council on the Dwellings of the Poor, explained what this organisation had done to improve workmen's dwellings in London and pointed out that since the year 1866 sanitary inspectors had been appointed to watch over the internal condition of such houses. He then explained the financial difficulties that beset the question. The section requested Mr. Franklin to write a full report on what had been done in England to house the poor, so that it might be distributed to the members of the Congress. Dr. SYKES followed with an account of the various laws enacted in England on this subject. The section finally adopted a motion stating that the Governments should facilitate the construction of cheap dwellings and their purchase by the working classes. This could be done by special reductions in the taxation of such houses and other financial facilities. Then measures should be taken to ameliorate the condition of existing dwellings, notably by organising efficient sanitary inspection. The principle that the authorities might themselves construct dwellings is also recognised in this resolution.

Mr. FRANKLIN proposed a motion to the effect that it was more important to render wholesome the dwellings now occupied by the poor than to build new houses; that the building of workmen's dwellings was a matter of considerable difficulty and persons of influence should join together to help this movement forward. This motion was also adopted.

On the last day the question of disinfecting dwellings came up for discussion. Dr. VAN ETTINGEN pointed out that there were the disinfection during an illness and the final disinfection after the illness. This required constant surveillance and much propaganda, so that the public might learn to appreciate its importance. Dr. A. J. MARTIN and Dr. ROUX explained what was being done in Paris. The difficulty was to organise a process that could be applied to luxuriously furnished apartments. It was easy enough to disinfect a poor dwelling. In Paris proprietors of houses often asked to have their premises disinfected before letting them to new tenants. Dr. HERMANN of Mons, Belgium, spoke of the practical difficulty of disinfecting houses in rural districts, and M. KIRSCHNER inquired what sort of disinfection was practised after floods, without eliciting any very satisfactory reply. Dr. BUYSSE wanted the disinfecting services to be organised in the same manner as the fire brigades and to act as promptly. Some description was given as to what was done in regard to disinfection in Holland, Italy, England, Roumania, and other countries. The section then adopted the following motion proposed by Dr. MARTIN, chief of the Paris sanitary services:—

> The disinfection of dwellings should only be effected by the employment of such processes and apparatus as have been authorised after very precise experiments made to verify their efficacy. The practice of the disinfection of dwellings in cases of transmissible diseases should be submitted to an administrative and technical control. The conditions of this control should be set forth with great precision.

Another motion was adopted to the effect that a prize should be offered at the next congress to the author of the best process of disinfection applicable to localities where the population is under 3000.

THE SEVENTH SECTION.

The work of this section was confined to hygiene in the colonies, the first subject discussed being the sort of food that was most suitable in hot climates. On this question Dr. IRGNI displayed mistrust of laboratory experiments and thought more time should be devoted to observations and experiments on persons when actually at work, and in this he was supported by Dr. LANGLOIS, while several other speakers denounced the evil effects of the want of variety in the food that is sometimes given. Dr. MAUREL insisted on the necessity of reducing the proportion of nitrogenous food taken in hot climates. Dr. VAN CAMPENHOUT, judging from his own experience, found that it was necessary to eat as much in a hot climate as in Europe. His appetite was quite as good in the Congo as in Brussels. Eventually the section adopted a motion to the effect that it was well not to eat much meat in hot climates, but it rejected a motion that inferred that it was necessary to eat less in the colonies. Dr. CELLI now explained his report on malaria and the efforts made to deal with the mosquitoes. He said that a great deal of good had been done by distributing quinine among the workmen. Professor PLEHN of Berlin argued that the great object was to prevent the mosquitoes themselves from being infected. Sir PATRICK MANSON remarked that the land must be drained and curative and preventive methods, both mechanical and medical, must be taught to all persons about to emigrate to a hot country. It would be well before allowing a person to go to these countries to make experiments at home so as to see if he was capable of taking large doses of quinine.

In the afternoon of the second day the discussion reverted to the question of malaria and some difference of opinion was manifested as to the efficacy of quinine and arsenic. For instance Dr. PITTALUGA recommended arsenic, quinine, and iron, but Dr. CELLI said that the efficacy of this combination would depend solely on the amount of quinine which it contained. As a result of the discussion it would seem that on the whole the value of the use of quinine depends upon the peculiarity of the individual to whom it is given. A motion to this effect was carried as well as another motion inviting the Governments to agree as to measures to be taken against malaria. Then Dr. FIRKET proposed a motion congratulating the Italian Government on the humanitarian measures which it had taken to reduce the prevalence of malaria. This was carried by acclamation. Before leaving this subject I should remark that Dr. VEDY and Dr. BERTRAND, who practised for some time in the Congo, both bore witness that

one of the best preservatives against malaria was to lead an active life.

After joining with the sixth section to discuss the question of quarantine and plague the seventh section again sat separately. Dr. CELLI showed by lantern slides the different mechanical methods employed in Italy against malaria and then a discussion was commenced on sleeping sickness. Dr. VAN CAMPENHOUT explained that different observers did not agree as to the cause of this malady and concluded that as they did not know the cause they could not know the remedy. Nevertheless, he proposed as a motion that the sick should be isolated, that they should not be allowed to travel, and that when taken ill they should not be sent home. This was adopted. Sir PATRICK MANSON gave some description of what British missions had seen in Africa. He agreed that the cause was not known though it seemed as if the trypanosoma had something to do with it. M. BLANCHARD described the experiences of a French mission in Africa. They had 15 cases of trypanosomiasis and this seemed to confirm Sir Patrick Manson's opinion. He did not think that Europeans were quite exempt from the danger of catching the disease.

Beri-beri was next discussed and Dr. VANDENBURGH of Utrecht thought that it was caused by monotonous diet and alcohol. Dr. FIRKET thought that it was a polyneuritis caused by alcohol, dysentery, typhoid fever, bad food, &c.; in a word, that it was not a disease by itself but the consequence of other diseases. A good deal was then said as to the creation of sanatoriums in high altitudes or by the seaside, so that Europeans in hot climates might have places where they could go which were better suited for the treatment of the diseases which they may contract. Then Sir PATRICK MANSON, quoting observations made by Dr. Hamilton Wright, insisted that beri-beri was an infectious disease of the intestines that could prove fatal within three weeks. The post-mortem examinations which he had made confirmed this opinion and it was evident that fæcal matter was a means of spreading the disease. Dr. FIRKET proposed that:—

In the absence of sufficient and positive knowledge on the origin of the different cases of beri-beri it is necessary that the matter should be more fully investigated. While awaiting the results of such an investigation it would be well to apply strictly to the coloured populations the general rules of hygiene which the experience of colonial practitioners has shown to be useful and more especially those rules that relate to food and lodging.

This motion was carried unanimously.

The section now considered the difficulties of vaccination in hot climates, but after a while the discussion turned to the necessity of creating schools for the special study of colonial diseases and for the training of nurses to help in the colonial hospitals. A motion to this effect was carried. Then the section returned to the subject of vaccination, dealing more particularly with the difficulty of preserving the lymph in hot climates. In the use of animals it was urged that the religious feelings of the natives should always be respected. The following is the text of the motion which was proposed by Professor CALMETTE and seconded by Dr. REYNAUD, and which was adopted:—

1. In view of the difficulties experienced by vaccinators in hot climates when they seek to obtain animals for the production of lymph the employment of rabbits may be recommended. In certain exceptional cases, such as the impossibility of procuring suitable animals or repeated failure in attempting to inoculate animals, recourse may be had to vaccination from arm to arm in urgent cases and when all the necessary precautions are observed.

2. The employment of the virus of small-pox after several passages in the monkey and the consecutive inoculation of a susceptible animal such as the rabbit is a question worthy of experimentation in an appropriate laboratory.

Another motion, proposed by Dr. VANDENBURGH and seconded by Dr. BOREL, was also unanimously adopted. It is thus worded:—

The small-pox epidemics resulting from Mussulman pilgrimages are often more serious than those of plague. They should attract the attention of the Governments and the Governments concerned should seek to take appropriate measures to prevent such epidemics. In so doing, account of the religious sentiments of the native populations must be taken into consideration.

VACCINATION EXPENDITURE.—At the meeting of the Axbridge (Somerset) board of guardians, held on Sept. 15th, it was reported that during the three years preceding the coming into operation of the new Vaccination Act the payments to public vaccinators and vaccination officers amounted to £203, while for the three years subsequent to the Act coming into force the fees were £932.

TYPHOID FEVER IN BELFAST.

(FROM A CORRESPONDENT.)

Professor J. Lorrain Smith has just presented to the public health committee of the city of Belfast a voluminous report, embodied in a pamphlet of 100 pages, entitled "On the Occurrence of Typhoid Fever in Belfast," which will indeed be anything but pleasant reading for the corporation and the water commissioners, the bodies he holds responsible for the prevalence of typhoid fever in the city of Belfast. For the ordinary citizen it has, indeed, been most unsatisfactory reading to find for some time back one of these bodies blaming the other for the presence of this preventable scourge in Belfast, but Professor Smith divides the responsibility and shows that both bodies have been guilty of dereliction of duty.

At the outset an interesting *résumé* of the general history and character of typhoid fever is given, with an account of the avenues of indirect infection (mainly water) and the conditions of direct infection (the patient himself, and if the discharges from typhoid fever patients could be disinfected and the bacillus destroyed at this point the disease would rapidly cease to exist), and then a very detailed dissertation takes place in reference to the disease in Belfast. Between 1881 and 1888 the annual death-rate from typhoid fever varied between 2·4 and 3·7 per 10,000; in 1889 and 1890 it rose to 7·9 and 7·6. In 1897 it rose to 11·4; in the following year to 18·8; in the next year it dropped to 7·5; and in 1901 it was 9·7 and in 1902 4·7. Why is it that since 1889 the community has suffered from a typhoid fever mortality more than double that of the preceding eight years? In 1888 the main drainage scheme was commenced, and since then a great advance has been made towards cleanliness within the city, and surface pollution (one of the most undoubted causes of typhoid fever) has been enormously reduced in extent in the city, and yet signal failure has been the reward of these efforts—that is, while as a result of these sanitary reforms there has been a distinct fall in the death-rate from zymotic disease other than typhoid fever, that disease has not been affected; in other words, there is a cause of typhoid fever infection at work which has not been touched by any sanitary measure in force. Referring to the question of house accommodation Professor Smith points out that Liverpool had one-quarter and Manchester one-eighth of the Belfast mortality from typhoid fever in the last five years, yet Belfast is not inferior in its accommodation for the working classes to any of these cities. In reference to house sanitation the results of an investigation are given regarding the defects in sanitation which existed in five areas in different districts of the city, which are appalling and confirm all the statements made by the special commissioner of THE LANCET in reference to his visit to Belfast several years ago. In one district 33 per cent. of the drains were defective, in another 32, in another 47, in another 37, while in one actually 73 per cent. of the drains were defective. No wonder Professor Smith remarks "that a very large amount of improvement remains to be carried out before the sanitation of the city can be regarded as in a satisfactory state." It is a terrible indictment against the public health authorities to read that in a district (area E) "where the houses were built about eight years ago 37 per cent. of the drains are defective and the general result of the whole investigation is that about half the drains are defective." The reform in progress of substituting water-closets for privies is proceeding too slowly. "There still remain nearly 10,000 to be dealt with." The sanitary defects which have been revealed all more or less contribute to the conditions which make it easy for typhoid fever to find a footing in the city and while they remain, Professor Smith says, we cannot expect that degree of freedom from disease which ought to exist, but he thinks there is no evidence from the investigation of these experimental areas to show that the peculiar burden of typhoid fever which is laid upon the city is due in the first instance to these defects. In reference to direct infection Professor Smith points out how unsuitable a very large number of houses in Belfast are for the treatment of typhoid fever patients at home, but what can be done when, as quoted by Professor Smith, the medical officer of health of the city states in his report for 1901 that there is no

city in the three kingdoms where the hospital accommodation is so limited as in Belfast and, notwithstanding constant attention having been called to the matter, there is even yet no city fever hospital. In 1901 there were 2530 cases of typhoid fever notified, and in addition 1351 cases of "continued fever," and yet there is no municipal fever hospital. No wonder Professor Smith says "its immediate erection is most urgently demanded." The only available place is the workhouse fever hospital and if patients are to go there "the arrangements should, if possible, be made such that all classes of society would readily avail themselves of it."

Dealing next with the question of the water-supply Professor Smith says:—

> We have then before us these facts: (1) a catchment area imperfect in type at Woodburn, much deteriorated since it was acquired; (2) an added area at Stoneyford which began to supply water after the autumn of 1898 of the same general type as that of the Woodburn district but inferior; (3) the presence of typhoid in both areas, but especially in Stoneyford, and there especially in recent years; (4) no proper means for dealing with cases of typhoid when they occur or with the general sanitary conditions of the catchment areas and a considerable amount of resistance to being disturbed for the sake of sanitation on the part of the inhabitants.

He finally sums up the question as follows. In 1889 there was a general outbreak of typhoid fever over the whole of Europe. Belfast in that year suffered to a very large extent and since then has never been able to shake off the disease. To get rid of typhoid fever (1) the soil must be kept pure in the neighbourhood of the house, and especially by cleansing the surface from all fæcal contamination; (2) the water-supply must be purified, not only by filtration of polluted waters, but by the prevention of pollution; and (3) cases of the disease as they occur must be removed to a fever hospital so as to prevent the direct infection due to treating typhoid fever patients in unsuitable houses. Sanitary defects in the city should be made good but these measures will not be successful in preventing typhoid fever unless at the same time the sanitation of the catchment area is remodeled. Professor Smith favours the developing of the Mourne scheme of water-supply and thinks that owing to the risks of pollution at Stoneyford no preventive measures adopted there would give the same promise of security as the adopting of the Mourne water as the primary supply of the city. To stamp out typhoid fever the disease should be attacked in the manner which Koch recommends—that is, each case as it occurs should be removed to hospital and a thorough search should be made amongst those who live in the same houses as the patients or who have come into contact with them for any signs or symptoms of illness. All cases showing even the mildest disturbance of health should be carefully treated until they can be pronounced free from infection. Finally, Professor Smith makes the following recommendations:—

> 1. Increased effort on the part of the public health authorities is required in order to remove the sanitary defects which exist in a large proportion of the houses, and special efforts should be made to control surface pollution, leaky drains, and defective privies, and ashpits should be abolished. Greater care should be exercised in testing the drains of new houses. Defective sewers should be repaired or reconstructed. The drains and sewers of new streets should be in satisfactory working order before occupation of the house is permitted. The streets and back passages should be constructed so that thorough cleansing can be carried out. Uncleanliness in the house and unsanitary habits should be restrained by every available means, and the sanitary officers should have some effective way of enforcing measures for this purpose.
>
> 2. That the Municipal Fever Hospital should be erected with the least possible delay and every effort should be made to extend the practice of treating typhoid cases in hospital. An attempt should be made, if possible, to remove the prejudice which exists in the community against the use of the present fever hospital, so that patients from all classes of society might take advantage of it.
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> 3. The attention of the Public Health Committee should be given to the subject of latent and ambulatory forms of typhoid fever and to the milder forms of the disease occurring among children. Without waiting for the scientific exposition of the difficult problems presented by these conditions much good might be done by the isolation of cases as far as possible. Cases of simple continued fever should also be dealt with in this way.
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> 4. The sale of shellfish should be regulated so as to prevent those taken from the sloblands in the lough being used for food.
>
> 5. As regards milk-supply, an effort should be made to induce the public health authorities in those districts from which milk supplies are drawn to introduce regulations regarding cowsheds and the handling of the milk.
>
> 6. More stringent regulations regarding the keeping of pigs in the city should be introduced.
>
> 7. The sanitation of the catchment areas of the older water-supply should be thoroughly reorganised so that the commissioners should have sufficient power to deal with (a) general pollution of the streams; (b) the stamping-out of typhoid fever, which is endemic in Stoneyford; and (c) the treatment of typhoid cases by isolation.
>
> 8. The water commissioners should as soon as possible convert the Mourne area into the primary source of water-supply for the city.

The report, which is a very valuable one, conducted in a thoroughly scientific and practical way, is a serious impeachment of two public bodies, the corporation of Belfast through its public health committee and the water commissioners. Many of the recommendations were imbodied in a report of a special committee of the corporation held in 1896 ("The Harrison Report"), but owing to the excuse of expense to the city and expense to the property owners not much has been done. I am sure that the water commissioners will do their best to adopt Professor Smith's suggestion to make the Mourne scheme the only one for the city, but I am sorry to have to confess that I have not so much faith in the health administration of the corporation. Belfast from a public health point of view is really almost a quarter of a century behind any English city of half its size. Imagine a city with a population of 350 000 with such awful sanitary defects as Professor Smith points out, with about half the drains defective, with 10,000 houses still without water-closets, with no city fever hospital, with a main drainage system so utterly inadequate to the present size of the city that in times of very heavy rain portions of Belfast are inundated, and with the sewage discharged into the beautiful lough instead of being carried far out, so that the residences of those on each side are polluted with an abominable miasma according to the direction of the wind which blows over the sewage infected water. Again and again the local press has tried to get some reforms carried out, the medical journals, and notably the special commissioner of THE LANCET, have pointed out the utterly absurd position which Belfast occupies from a public health point of view, and yet the public authorities seem to be callous and impervious to all criticism, apparently quite content that Belfast should become a by-word and be branded as a plague-spot. A new city surveyor has just been appointed and if with him there was associated a thoroughly energetic and efficient man who has had experience as an English officer of health they might between them do something, provided they got a free hand, to carry out the reforms suggested by Professor Smith; but they will have a heavy task to correct the results of bygone jerry-building, to prevent flooding, and to purify the city sewage. The labours of Hercules were mild in comparison with what they will have to do in the Augean stable of Belfast.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The Slow Progress in Sanitary Matters in India.—Some Difficulties of Vaccination.—The Plague Epidemic.

FEW people at home realise "what an immense amount of work there is to be done in sanitary matters in India; what an immense amount of labour has to be expended in schemes, explanations, and suggestions before any improvement comes within measuring distance of serious contemplation; what apathy, slackness, and ignorance on the part of both officials and populace have to be overcome; and finally, how little can be actually accomplished for want of money." These remarks upon a recent sanitary report may be aptly applied to the Santipur municipality which, after several years' "cautioning," has been superseded by order of the Government. Here is a town of some 30,000 people which has been governed by a municipality of natives. In 1895 the sanitary commissioner brought to notice that the night-soil was received in "well privies," of which there were about 4000. Nothing was done until 1898 when the municipal commissioners asked for further powers but withdrew their application. All this time the water-supply was being contaminated by these cesspools. In 1899 the Lieutenant-Governor refrained from exercising his summary powers because the rate of mortality in the town was not excessive. The floods of 1900 caused an outbreak of cholera, but still nothing was done except the writing of reports and recommendations. In 1901 the town was again inspected and the water-supply was found to be highly contaminated. Finally, last May these municipal commissioners practically refused to do anything. Now after all these years the Lieutenant-Governor finds that the municipal commissioners have persistently made default in the performance of their duties and have proved themselves incompetent and directs that they be superseded. But for how long? For only one

year. The decision is simply astounding. What improvement can the local official of the Government be expected to accomplish in one year and what a farce it will be to hand over again the sanitary administration of the town to a similarly constituted body of men. The craze for giving representative municipal government to the natives started some 30 years ago and has been shown times without number to be absolutely disastrous to sanitary progress, but the inactivity of the Government against such scandals as the above calls forth more comments from a visitor to India than the supineness of the native commissioners.

Owing to the unsatisfactory vaccination returns in the city of Calcutta during the past year important changes are contemplated. In 1902 hospital assistants replaced the old vaccinators, but they have proved too "high" for their work, and now it is proposed to have several inspectors with a different class of men as vaccinators. The four female vaccinators for the whole of Calcutta are to be continued. Vaccination has also suffered in the Punjab. In the plains, where plague is well known, vaccination continued as before, but in the hill districts the people feared that under the presence of vaccination they would be subjected to anti-plague inoculation.

The plague mortality throughout India has again advanced, 7158 deaths being recorded for last week. Of this number, 5087 occurred in the Bombay Presidency, 798 in Central India, 487 in Mysore, and 345 in Hyderabad. In Bombay city the disease shows signs of re-development and ominous reports come also from Calcutta. Ootacamund continues to report cases.

Sept. 4th.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Health of the City.

AT the commencement of the course of instruction in hygiene given each year at the Midland Institute it is the custom for the lecturer to give a public address on some subject connected with health. The present lecturer is Dr. W. Wright, senior assistant in the anatomical department of the University of Birmingham, and on various occasions he has given valuable public lectures in connexion with the classes at the Midland Institute. This year his subject was that of Tuberculosis and the lecture, which was intended for the general public, was illustrated by lantern slides. The chair at these lectures has generally been taken by the chairman of the health committee of the corporation, who takes the opportunity of making a public statement as to the health of the city during the preceding twelvemonth. On this occasion Alderman Cook was, as usual, in the chair. Referring to the death-rate he stated that up to the end of August it was 16·6 per 1000 of the population, this being the lowest on record. The rate for the corresponding period of last year was 18·1 and the average for the five preceding years was 20·0. Climatic conditions had no doubt been favourable, but a considerable part of the reduction in the death-rate was directly due to the great improvements which had been made in the sanitary conditions of the city. Should there be no bad outbreak in Birmingham this year they would have a lower death-rate than even they had had last year. If they took the zymotic diseases all round they had every reason to be gratified at the improvement which had taken place. At present an outbreak of small-pox in Birmingham was attracting a good deal of attention. They had ten cases now and they were directly traceable to one case which was sent into Birmingham from an outside district.

Small-pox in Birmingham and Burton.

As will be observed from the remarks of the chairman of the health committee of Birmingham the period during which the city has been free from small-pox was very brief and a fresh batch of cases, at present few in number, has now been reported. At Burton-on-Trent a local medical man has recently been summoned for failing to notify a case of small-pox. It was shown that the patient, when visited by the medical officer of health, was covered with the dried-up crusts of the pustules of small-pox from head to foot. Since this case there have been 18 others in the borough alone and 16 were directly traceable to the case in question. The defence was that the medical man had made a diagnosis of impetigo and that he had only been guilty of an error of judgment. In cross-examination the accused medical man admitted that he had once previously received a warning from the medical officer for not notifying an infectious case. In the end a fine of £2, with £3 7*s.* 6*d.* costs, was inflicted.

New Lunatic Asylum for Worcestershire.

Before very long it will be necessary when summing up the population residing on the Lickey Hills, close to Birmingham, to speak of them as "mostly lunatics," for the hills are already occupied by two huge asylums, one at Rubery and another at Hollymoor, belonging to the corporation of Birmirgham, and now within a few miles of them is being erected a third asylum for the county of Worcester, as was recently stated by one of your correspondents. The asylum at Powick, near Worcester, which has accommodation for 1060 patients only, has been for some years sorely over-taxed. The administrative departments of this institution, which was opened in 1852, being far too small it was not considered advisable to attempt an extension of the old premises but rather to erect a new building upon another site. Accordingly the Barnsley Hall property on the Lickey Hills was purchased some years ago by the county council for the sum of £17 000. This estate lies about one and three-quarter miles north of Bromsgrove and is easily accessible from all parts of the county. The plans for the new asylum, which have been prepared by Mr. G. T. Hine of Westminster, provide for a main asylum capable of containing 570 patients (254 males and 316 females), with administrative offices sufficient for an extended asylum for from 1000 to 1200 patients. In addition to the patients' wards the institution will contain a large recreation hall, kitchens and offices, quarters for nurses and attendants, workshops, laundry buildings, and also offices for the visiting committee and staff, together with accommodation for assistant medical officers. The detached buildings comprise a chapel with sitting accommodation for 420 persons, a residence for the medical superintendent, an isolation hospital for the treatment of infectious disease, eight cottages for married attendants, and an entrance lodge. Careful attention has been paid to the provision of fire apparatus and means of escape in case of fire. The asylum will be only two storeys high and all over it will be fire hydrants, in the use of which the attendants will be instructed. The windows are of special design to permit of easy exit and in addition there are stone fireproof escape staircases and sliding iron doors to prevent the spread of any outbreak. The buildings will be lighted by electricity generated in the engine house. Water is procured on the estate from two bore-wells already sunk to a depth of 350 and 341 feet respectively. The water, which is stated to be of excellent quality, has risen to within 26 feet of the ground level. It will be pumped from the wells into a tower and thence conveyed by gravitation throughout the buildings. The available supply from each bore-hole is 7000 gallons per hour. Rain water for use in the laundry and boiler house will be collected in a large underground tank capable of containing 150,000 gallons. The estimated total cost of the erection, furnishing, and equipment of the buildings, omitting the cost of the site, is £215,887. The contract for the buildings amounts to £151,475, the cost of the boilers and heating apparatus is £10,412, the cost of the wells is £950, the electric light installation is estimated at £8000, while £2500 are required for the construction of roads. Professional charges, which include £8700 for the architect, amount to £12,300. The cost of furnishing and equipping the asylum with 570 beds, at an estimated expenditure of £25 each, is £14,250, and £3000 are to be expended in the laying out of the ground, gardens, airing courts, &c., and planting. The amount of the estimates for building shows an average cost of £325 per bed for 570 beds. At the stone-laying, which took place a few days ago, Alderman John Bowen, chairman of the visiting committee, presided and the ceremony was performed by the Earl of Coventry. After the stone had been laid lunch was served in a temporary pavilion near at hand.

New Infirmary at Stratford-on-Avon.

A new infirmary for women, which will accommodate 33 patients, was opened recently at Stratford-on-Avon. The building and equipment have cost about £4000. At the ceremony, which was performed by Mrs. Couchman of Henley-in-Arden, the chairman of the board of guardians said that some people were of opinion that the board spent money recklessly but that was not the case. In 1890 the guardians raised by loan £1500 for the building of new

tramp wards, slight alterations to the old infirmary cost £750, and they had borrowed £4700 for the new infirmary, but he was pleased to say they had not spent all that sum. On the laundry and engineering work they had spent £3582, bringing the total of loans to nearly £11,000. But the money borrowed was on varying terms from 25 to 30 years, and the annual repayment came to £337. At present a penny rate in the union produced £421, so that it could not be contended that the guardians had seriously burdened the rates.

Suicide of a Medical Man at Walsall.

A sad event occurred recently in Walsall in the suicide by hanging of Mr. Merson, a surgeon, aged 52 years, who was at the time medical officer to the Walsall Friendly Societies Medical Aid Association, a position which he had occupied for about four years. At the inquest the jury returned a verdict of "Suicide during temporary insanity produced through overwork," and they desired their sympathy to be conveyed to the widow and family of the deceased.

Sept. 22nd.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Inspection of Corporation Hospitals.

IN the civic economy of any community there is no more important work than that involved in combating disease and in no place in the kingdom is there a more cordial recognition of this than in Liverpool. Hence the annual committee inspection of the civic hospitals is invested with more than a passing interest. Early in the forenoon the City Hospital North, Netherfield-road, was visited; the committee then visited the Priory-road Hospital, the Fazakerley Hospital, the City Hospital East (Mill-lane), Parkhill Hospital, and the City Hospital South, Grafton-street. To complete this round a full long day was required. In each case the greatest possible satisfaction was afforded by the condition in which everything was found. Special interest centred in the Fazakerley scheme. In 1898 a magnificent site, comprising 120 acres, was purchased at Fazakerley. At present hospital accommodation has been provided on it for 150 patients. To the northward of, and some distance from, the existing hospital, on the same site, it is intended to erect a fine hospital to accommodate 300 patients at a cost of £130,000. The new premises will consist of nine ward pavilions and four isolation blocks, in addition to administrative block, kitchen block, nurses' home, laundry, and dispensary. This Fazakerley scheme, when completed, will place Liverpool in a unique position so far as hospital accommodation is concerned. Luncheon was served at the Parkhill Hospital, Alderman Dr. Thomas Clarke, chairman of the port sanitary and hospitals committee, presided, and amongst others were the Lord Mayor, members of the committee, Dr. E. W. Hope (the medical officer of health), Dr. A. A. Mussen (assistant medical officer of health), Dr. N. E. Roberts, Dr. R. I. Richardson, Dr. R. S. Archer, the visiting physicians to the hospitals, and other corporate officials. The chairman, in proposing the toast of "The City Hospitals," expressed his own and the committee's appreciation of the extremely valuable and enthusiastic services rendered by every individual connected with the administration of the hospitals. During the past year they had increased the hospital accommodation by 200 beds, and when the new hospital at Fazakerley was completed in about two years' time they would be in a position to deal not only with the usual incidence of infectious disease, but with any ordinary outbreak that might occur in Liverpool. Dr. Hope, in returning thanks on behalf of the staff, said that during the years of Dr. Clarke's chairmanship of the committee more than 30,000 patients had been treated in the city hospitals, the vast majority of whom had been restored to their friends, and he had been the recipient of gifts of money, pictures, and books for the use of the hospitals as a mark of gratitude from many patients.

Low Death-rate of Liverpool.

At the weekly meeting of the health committee of the city council, held on Sept. 17th, attention was called by the chairman to the comparatively low death-rate of the city which was equal to a yearly average of 19·2 per 1000 of the inhabitants. Commenting on the fact, Dr. Hope (the medical officer of health) said that they had recently had one of the lowest rates of mortality in his recollection. The late rainfalls had had an excellent effect on the sanitary condition of the city by way of cleansing the streets, the roads, and the drains, and notwithstanding the recent epidemic of small-pox the death-rate was lower than it had been for years.

University of Liverpool.

The inauguration of the winter session of the medical faculty of the University of Liverpool will take place on Thursday, Oct. 1st, when the introductory address will be delivered by Sir Dyce Duckworth, physician to St. Bartholomew's Hospital, London, who will also distribute the prizes to the successful students of the faculty. The University buildings will be open for inspection by the public. It is requested that academic dress be worn at the ceremony.

Sept. 22nd.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Water-supply of the Rhondda Valleys.

THE provision of an increased water-supply for the Rhondda valleys has been under the consideration of the urban district council for many years, but there appears to be at last some prospect of definite action being taken in the matter. Broadly speaking, about one-half of the 20,000 houses in the two valleys are supplied by the Pontypridd waterworks company which has reservoirs with a storage capacity of 220,000,000 gallons at the head of the lesser valley. The average yearly rainfall over the gathering grounds which feed these reservoirs is 55 inches and if the peaty water could only be efficiently filtered there would be very little reason to complain of the supply to this portion of the district. Most of the remaining 10,000 houses receive their supply from works owned by the sanitary authority which only possesses, however, reservoirs for storing some 7,000,000 gallons. These works was purchased by the district council in 1898 from a private company consequent upon a successful action brought by the council against the company in 1895 under Section 52 of the Public Health Act, 1875, on the ground that the company was unable or unwilling to provide a proper and efficient supply of water to the district. Notwithstanding the fact that eight years have elapsed since the council came to the conclusion that an increased supply was necessary and although there have been at least 2000 new houses erected and occupied within the same period it was only on Sept. 11th last that it was decided to construct a new reservoir to hold 104,000,000 gallons at the head of the great valley at an estimated cost of £32,000. Although the adjoining gathering ground covers only 120 acres there is an average annual rainfall of about 70 inches. Alternative schemes to that which has been adopted included the sinking of wells below the coal measures and tunnelling through the mountain to the Vale of Neath, whence it was proposed to pump water by electrical power from a large lake into the existing small reservoirs. As water carriage is almost universal in the Rhondda district it is evident that the provision of an abundant supply of water is a question of the gravest importance to the inhabitants of the district.

A Cottage Hospital for Tredegar.

The foundation-stone of a cottage hospital was laid on Sept. 14th at Tredegar (Mon.). The building is to be erected in a public park recently given to the district council and will include a ward for nine patients, two private wards, an operating-room, nurses' and medical officer's rooms, and six bedrooms for nurses and servants. The total cost of the institution is estimated at £3500, towards which sum £1000 have already been subscribed. The workpeople employed in the district are extending very generous support to the building fund.

Water-supply of Caerphilly.

The medical officer of health (Mr. T. W. Thomas) of the urban district of Caerphilly, a rapidly increasing colliery district in Glamorganshire and adjoining Monmouthshire, has over and over again during the past few years called the attention of the sanitary authority to the inadequate supply

of water in portions of the district. In connexion with a localised outbreak of typhoid fever Mr. Thomas recently reported that some of the water supplied to the infected district was obtained from a brook at the upper end of which is a farm where 18 cows, pigs, &c., are kept and where there is a cesspool which could easily overflow into the brook. The only filtration to which this water is subjected is by passing it through a strainer consisting of a piece of tin or iron plate in which had been punctured several holes large enough to admit an ordinary lead pencil. The supply from this source appears now to have been discontinued, but the inhabitants have been advised to boil their drinking water before use.

A Difficulty under the Notification Act.

At the meeting of the St. Austell (Cornwall) rural district council held on Sept. 18th the medical officer of health reported that he had visited the coastguard buildings at Gorran Haven where two cases of scarlet fever had been notified. He was, however, refused admission and was informed by both the chief officer and chief boatman that they were thereby acting in accordance with their printed instructions. It was eventually agreed to write to the Admiralty on the subject, the clerk remarking that as the coastguard buildings were Crown property he did not think that the medical officer of health had a right of entry, but it seemed unreasonable for the chief officer to notify the illness and then to refuse to admit the medical officer of health.

Sept. 21st.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal City of Dublin Hospital: Resignation of Sir George F. Duffey.

AT the last meeting of the board of the Royal City of Dublin Hospital a letter was read from Sir George F. Duffey, M.D., resigning the office of physician to the hospital which he has filled for over 21 years. It was unanimously resolved:—

That Sir George F. Duffey's resignation be accepted with the greatest regret and that the directors desire to convey to him their sincere sympathy with him in the present state of his health and their earnest hope that with time and rest it may be re-established, and they wish to place on record their great appreciation of the services he has rendered to the hospital and the unremitting energy and skill he has displayed in the discharge of his duties during the long period—21 years—in which he has so ably filled the post of visiting physician to the hospital.

At the same time a motion was also unanimously passed recording the deep sense of the directors of the hospital of the loss which the hospital had sustained in the death of the late Mr. Henry Gray Croly who for the long period of 40 years worked so successfully and devotedly in its interests.

The Omagh Guardians and their Medical Officer.

The conflict between the Poor-law guardians and their medical officers continues. At a meeting of the Omagh guardians held on Sept. 19th Mr. G. Murnaghan, M.P., being in the chair, a letter was read from Mr. A. M. Lowe stating that he was unable to obtain a substitute to act for him for £2 2*s.* per week and respectfully asking the board to reconsider the question of the payment of his substitute. A letter was read from Dr. E. C. Thompson, M.P., stating that he had advised Mr. Hunter, of Carrickmore Dispensary, to cease work for at least four weeks owing to the precarious condition of his health. Mr. Duncan, the relieving officer, said that he had approached two other medical practitioners in the district, but both said that they would be unable to take up the duties. Moreover, it was essential that there should be a medical officer in Carrickmore district. The chairman and guardians decided to leave the matter in the hands of the relieving officer in order to obtain the best terms he could from medical men. The result will be awaited with interest.

Provision for Infectious Diseases in Belfast.

In THE LANCET of Sept. 19th, p. 853, reference is made to an interview between a deputation from the Royal Victoria Hospital and the Belfast city council on Sept. 1st. It was then suggested that in order to get over a difficulty that has arisen through the city fever hospital not being yet ready the corporation should take the old Royal Hospital and use it as a fever hospital for patients of the middle classes until the new building was ready. The matter was left to the public health committee, which approached the Poor-law guardians to relieve it from the *impasse*, and it was suggested that under the provisions of the Local Government (Ireland) Act, 1898, the guardians should convert the workhouse fever hospital into a district hospital, with the result that fever patients of the class formerly admitted into the old Royal Hospital could be treated in this district hospital, the control of which would be under a joint board of the guardians and corporation, the corporation being financially liable for maintenance to a certain extent. The real difficulty is to make a provision for a temporary period of three years until the new infectious diseases hospital is ready. At a special and extraordinary meeting of the guardians held to consider the question on Sept. 18th it was, after a prolonged discussion, decided by a large majority (13 to 4) "to take no action in the matter," the reasons which influenced the majority in coming to this verdict being: 1. That the duty of the Poor-law guardians was to provide for the poor and destitute. 2. That it lay with the corporation to provide the temporary accommodation for fever patients of the class described until the new hospital was ready at Purdysburn. One of the guardians pointed out that the Public Health Act was passed in 1878, and that under the 155th section of that Act the corporation was empowered to provide, either by building or by acquiring a hospital, for the treatment of those cases. "It was now," he said, "1903 and during the whole of that period—25 years—no practical step has been taken by the Belfast corporation to carry out the powers vested in it." It is, however, fair to the Belfast corporation to say that the Infectious Diseases Notification Act was not adopted until March, 1897, and that their new infectious diseases hospital has just now been begun. 3. That in former years the guardians spent £2000 to provide special arrangements for paying patients (such as those who went to the old Royal Hospital), making a special entrance for them (so as to do away with the sentimental objection against the workhouse fever hospital), and yet it was a complete failure and loss financially, the only paying patients who entered being two policemen. 4. That while at present, fortunately, there were only 106 cases in the workhouse fever hospital, with room for 200 more, yet experience had shown in the case of epidemics that there might not be sufficient accommodation. During the last great outbreak of typhoid fever other buildings besides the union fever hospital proper had to be cleared out to provide for the poor. The public health committee will now have to reconsider the situation. It is, however, extraordinary that the committee did not ascertain beforehand that the guardians would not agree to this plan of trying to convert a workhouse hospital into a district fever hospital; moreover, even if the scheme had worked on paper it would have been practically a complete failure as the patients to be provided for who are willing to pay a little will in no circumstances, considering the class they come from, enter a workhouse hospital. I am sure that the board of management of the old Royal Hospital will meet the city authorities in the fairest possible way, and if it takes over that institution it will have ample room for fever patients of the middle classes, and it will gain an experience as to the working of such an institution which will be of the utmost assistance to it, when in three years' time the new infectious diseases hospital will be built and ready to receive patients.

Sept. 22nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Pensions for Soldiers' Widows.

THE Minister of War and the Minister of Finance have just come to a decision upon the question of pensions to soldiers' widows which modifies former regulations on the subject. Formerly the law provided that if the wounded man died after he had recovered sufficiently to go back to duty or if he lived for more than a year after the reception of his wound, then his widow would have no right to a pension. This was manifestly unfair, for everyone knows that a wounded man may recover sufficiently to go back to duty and yet may die at a much later date from the effects of his wound. The old law which is dated July 2nd, 1831, is now rescinded and the following takes its place.

A wounded man who is not considered as recovered within the lapse of one year from the receiving of his wound shall obtain a certificate from the military medical authorities to the effect that the results of his wound are still manifest. This certificate must be renewed year by year. The medical man who attends the patient at the time of his death must give a certificate to the effect that the wound was the primary (*directe*) cause of death. All medical certificates must be signed by legally qualified persons. The widow of a wounded man who dies at a period of over one year from the date of the last medical certificate shall have no right to a pension.

A Memorial to Professor Charcot.

A memorial to the late Professor Charcot was unveiled on Sept. 20th at Lamalou-les-Bains, a thermal station which owes much of its prosperity to Charcot who was fond of sending ataxic patients there. The memorial consists of a bust from the chisel of Madame Charcot. The bust stands on a pedestal adorned with bas-reliefs representing a patient and Charcot giving a demonstration. The Minister of Public Instruction and the Minister of Commerce presided at the fêtes set on foot for the occasion and a large number of medical men were present owing to the excursion to the French mineral watering-places, organised by Professor Landouzy, being at Lamalou at the time.

The Plague at Marseilles.

As I said in my last letter, the little outbreak of plague at Marseilles is over. In all there were seven deaths, but the administration only count five, for the first two were not verified by bacteriological examination. The virus must have been very feeble, for no case occurred in the town except among the workmen infected at the factory. This factory is situated in a suburb of Marseilles, some three kilometres from the town itself, and this suburb has no sewers. Therefore the rats infected in the factory could not spread to Marseilles by means of the sewers and thus infect the town. The municipal authorities, helped by Dr. Chantemesse, have worked admirably. An inquiry is to be opened as to the route by which the infected rags obtained entry and also as to what ship brought them.

Sept. 22nd.

Obituary.

JOHN EDWARD BOYTON, M.R.C.S. ENG., L.A.H. DUB.

THE death of Mr. J. E. Boyton on Sept. 4th removed the oldest inhabitant from the town of Watlington, Oxfordshire. He was also thought by some to be the oldest surgeon in practice in the kingdom. He was born in April, 1816, and was therefore 87 years and six months old. He was admitted a Member of the Royal College of Surgeons of England in 1838 and became a Licentiate of the Apothecaries' Hall, Dublin, in 1839. He started to practise in Watlington about 61 years ago. He at first held the two appointments of medical officer to the Thame and Henley unions but subsequently gave up the latter. He was married in 1853 and leaves a widow, three sons, and two daughters. The sons are following in their father's footsteps in the medical profession. He was the medical officer of eight friendly societies in the neighbourhood, surgeon to the Great Western Railway, a certificated factory surgeon, and an honorary medical officer to the Watlington Cottage Hospital. He was also vice-chairman of the parish council, a life trustee of the Watlington public charities and the foundation scholarship, a director of the Lecture Hall Company, a member of the Horticultural Society, and a musician of no mean order. He was a Churchman and a strong Conservative and also a Freemason. He has been described as a remarkable character of the old English type, blunt, open, and to the point in his remarks, a great reader, and always up to date in his profession. Mr. Boyton was the son of Captain James Boyton, late of the 63rd regiment, and his grandfather, who lived to be 99 years and six months old, was also in the army.

WALTER SUMPTER, M.D. ST. AND., L.S.A.

ON Sept. 9th there died at his residence at Cley-next-the-Sea, Norfolk, Dr. Walter Sumpter in his seventieth year. His health had been failing for some time and he had recently undergone an operation. He was born in 1834 at Sunbury, Middlesex, though his family had long-standing ties with the counties of Norfolk and Suffolk. He was educated at University College and University College Hospital, London, where he qualified. He afterwards in 1857 obtained the degree of M.D. at the University of St. Andrews. He practised for a short time at Horncastle, Lincolnshire, and in 1858 went to Cley as locum-tenent for Mr. Corbet J. Cooke, medical officer of the Erpingham and Walsingham unions. This gentleman died soon after Dr. Sumpter's arrival and Dr. Sumpter thereupon took up the practice. He obtained several public appointments, amongst others those of district medical officer to the Erpingham board of guardians and Admiralty surgeon and agent for the district. He had also an extensive practice and was generally liked. The deceased gentleman took great interest in the advancement of the social welfare of the working classes. He was a thorough sportsman and was fond particularly of hunting, shooting, golf, cricket, and bowls; in fact, he was a keen advocate of all outdoor exercises. He was also keenly interested in superintending the life-saving work of the fishermen on the north Norfolk coast. He leaves four sons, three of whom are medical practitioners, and three daughters to mourn their loss.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Muravieff, *privat-docent* of neurology in the University of Moscow.—Dr. Matheus dos Santos, professor of hygiene in the University of Bahia.

Medical News.

UNIVERSITY OF DURHAM.—At the examinations for the Degree of Bachelor in Medicine held in September the following candidates satisfied the examiners:—

FIRST EXAMINATION.

Elementary Anatomy and Biology, Chemistry, and Physics.—John Ernest Hanna, James Wilkie Smith, and Leslie Henry Walker, College of Medicine, Newcastle-upon-Tyne.

Chemistry and Physics.—Ronald Martyn Davies, College of Medicine, Newcastle-upon-Tyne; Lionel Knipe Edmeades, Guy's Hospital, London; George Reginald Ellis, College of Medicine, Newcastle-upon-Tyne; John Everidge, King's College, London; Alfred Llewellyn Forster and Elizabeth Niel Havelock, College of Medicine, Newcastle-upon-Tyne; Thomas Harold Vessey King, Guy's Hospital, London; Herbert Max Levinson and Stanley Dunn Metcalfe, College of Medicine, Newcastle-upon-Tyne; Thomas Davidson Miller, M.R.C.S., L.R.C.P., St. Thomas's Hospital, London; Charles James Neilan, Edward Davison Smith, Howard Bewlay Stephenson, and George Walker, College of Medicine, Newcastle-upon-Tyne; and John Franklin Young, Guy's Hospital, London.

Anatomy and Biology.—Hubert Cyril Willoughby Allott, Edward Percival Hearne Joynt, and Herbert Fletcher Joynt, Guy's Hospital, London; and Robson Ethelbert Isaac Mason and John Paxton, College of Medicine, Newcastle-upon-Tyne.

SECOND EXAMINATION.

Anatomy, Physiology, and Materia Medica.—First-class Honours: Lewis Augustus Clutterbuck, L.R.C.P. & S. Edin., L.R.C.P. Irel., College of Medicine, Newcastle-upon-Tyne. Second-class Honours: Vincent Edgar Badcock, Florence Barrie Lambert, Frederick Charles Pybus, Neville Avory Eddlestone, and Richard Woodward Swayne, College of Medicine, Newcastle-upon-Tyne. Pass List: George Edward Peckett Davis, George Denholm, Horsley Drummond, Sampson George Victor Harris, M.R.C.S., L.R.C.P., D.P.H., Walter Nicholas Johns, Arthur Cecil Hays McCullagh, George Robert Philipson, Norman Spedding, James Burrell Williamson, and Thomas Leathard Wormald, College of Medicine, Newcastle-upon-Tyne.

FOREIGN UNIVERSITY INTELLIGENCE.—*Beyrout (French Faculty):* Dr. J. Calmette of Montpellier has been appointed to the chair of Therapeutics and Hygiene in succession to the late M. La Bonnardière.—*Leipsic:* Dr. W. O. Risel has been recognised as *privat-docent* of Pathological Anatomy.—*Moscow:* Dr. Serbski, *privat-docent* of Neurology and Psychiatry, has been promoted to an Extraordinary Professorship.—*Naples:* Dr. G. Colapinto has been recognised as *privat-docent* of Ophthalmology.—*St. Petersburg (Military Medical Academy):* Dr. S. J. Goldberg has been recognised as *privat-docent* of Bacteriology.

VACCINATION GRANT.—Dr. S. J. J. Kirby has received the Government grant for efficient vaccination in the Fressingfield district of the Hoxne Union.

EXETER AND DISTRICT HOSPITAL SATURDAY FUND.—The committee of this fund has recently made the annual awards for 1903, which include £170 to the Devon and Exeter Hospital and £75 each to the Dispensary and Eye Infirmary. The sum of £45 was divided among the smaller medical institutions.

PRESENTATIONS TO MEDICAL PRACTITIONERS.—Dr. Thompson Campbell, who has resigned the office of superintendent of the Ochil Hills Sanatorium, has been presented with a gold-mounted cane and a smoker's companion. The articles bear the inscription: "To Dr. Thompson Campbell, from Friends and Patients at Ochil Sanatorium. 31st August, 1903."—An engraved tea-tray and a purse containing £134 were presented to Dr. J. B. Montgomery, J.P., at the West Cornwall Infirmary on August 26th. The tray bore the following inscription: "Presented to James Barclay Montgomery, M.D. Glasg., F.R.C.P. Lond., in recognition of 50 years' gratuitous services as physician to the West Cornwall Dispensary and Infirmary, 1853-1903."—Mr. Percy Newell, L.R.C.P. and L.R.C.S. Irel., on leaving Crowborough, Sussex, where he had been in practice for 12 years, was presented by his numerous friends and patients with a silver tea and coffee service and an address on vellum. —The staff of the Sheffield Cleansing Departments have presented Dr. John Robertson, medical officer of health, who is leaving Sheffield, with an engraved silver cigarette case.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce for early publication a new (the sixth) edition of Dr. A. L. Galabin's "Manual of the Diseases of Women." The work has been greatly enlarged and contains twice as many illustrations as in the previous edition—viz., 284. The same firm has also in the press new editions of Dr. H. Jellett's well-known books on Midwifery and Gynæcology. The latter will be about twice as large as before and will be fully illustrated.—Messrs. Baillière, Tindall, and Cox will publish during the next few days "The Health of Armies in the Field," by Surgeon-Major Caldwell, a record of whose extensive experiences in South Africa, India, and elsewhere should prove useful in future campaigns. Also "The After-treatment of Operations," by J. P. Lockhart Mummery, F.R.C.S. Eng.; an illustrated handbook of "Diseases of the Ear," by Richard Lake, F.R.C.S. Eng.; "Home Nursing," by Dr. Bernard Myers; and a new edition of Mr. Mayo Robson's "Diseases of the Gall-bladder and Bile-ducts." New editions are also in the press of their Students' Aid Series in "Surgery," "Physiology," "Chemistry," and "Hygiene."

DONATIONS AND BEQUESTS.—Under the will of Mr. Richard Hawkins of Dublin King Edward's Hospital Fund for London receives a legacy of £10,000 and the City of Dublin Hospital and the Hospital for Incurables at Donnybrook will each receive a sum of £5000. Under the same will £2000 are bequeathed to the Rotunda Hospital, Dublin, and a like sum to the Royal Victoria Eye and Ear Hospital.—The late Mr. F. W. G. Moran of Glossop bequeathed £1000 to the Wood's Hospital, Glossop.—Under the will of Miss Marianne F. Hasker of St. Leonards-on-Sea the following institutions benefit to the extent of £1000 each: the Earlswood Asylum for Idiots, the East Sussex Infirmary, and the Cancer Hospital (Brompton). The following hospitals will receive £500 each: St. Mary's Hospital (Paddington), the London Hospital, Charing Cross Hospital, King's College Hospital, Chelsea Hospital for Women, the Royal Hospital for Incurables (Putney), Samaritan Free Hospital for Women and Children (Marylebone), and the Hospital for Sick Children (Great Ormond-street).—Under the will of Mr. Walter Evans of Darley Abbey, Derby, Derbyshire Royal Infirmary receives £1000; the Children's Hospital, Derby, £250; the Royal Deaf and Dumb Institution, Derby, £500; and the Devonshire Hospital, Buxton, £250.

UNITED KINGDOM POLICE SURGEONS' ASSOCIATION.—At the annual meeting of the members of this association, which was held recently the report of the council was presented. At the date (July 30th) of the last annual meeting the departmental committee of the Home Office had nearly completed taking evidence and it was hoped that its report would soon be issued. The council states that it regards the report in many respects as an admirable one. It is satisfactory to notice that the committee fully admits the insufficiency of the existing fees and allowances to medical witnesses, especially those attending sessions or assizes from a distance. It is satisfactory also to notice that it recommends the fee of one guinea for the medical examination of persons in cases of sexual offences. The council also records with pleasure the great assistance it has received from the council and officers of the British Medical Association in this important matter. The report of the council further states that early in the year Mr. F. W. Lowndes posted, at his own expense, copies of last year's report with a private letter and form of application for membership to 150 police surgeons whose names appeared in the last Constabulary Almanack. He also wrote letters to THE LANCET and the *British Medical Journal*, which were duly published, asking all police surgeons who had not received them and wished to do so to communicate with him. The result was very disappointing and the council reiterates the request given at the end of its last report that every member should coöperate in trying to obtain the accession to their ranks of police surgeons who are not members.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BLACKE, MORETON, has been appointed Deputy Medical to the Thornbury Workhouse and District.

BROWN, J. WALTER, B.A., M.B., B.Ch., has been appointed Medical Officer of Health for the County of Hokianga, New Zealand, and Native Medical Officer for the Hokianga District.

CAVENAGH-MAINWARING, W. R., M.B., Ch.B. Adel., has been appointed Honorary Assistant Surgeon to the Adelaide Hospital, South Australia.

CROSS, JOHN, M.B., Ch.B. Glasg., has been appointed House Surgeon to the Victoria Infirmary, Glasgow.

DAVIS, EDWARD SANDOM STONE, M.R.C.S., L.S.A., has been appointed District Medical Officer by the St. Austell (Cornwall) Board of Guardians.

ECCLES, W. MCADAM, M.S. Lond., F.R.C.S. Eng., has been appointed Joint Lecturer on Anatomy at St. Bartholomew's Hospital.

GEOGHEGAN, FRANCIS J., M.D. Trinity College, Dublin, has been appointed Resident Medical Officer to the Victoria Central Hospital and Wallasey Dispensary, Liscard, Cheshire.

GILES, W. A., M.B., Ch.M. Edin., has been appointed Honorary Surgeon to the Adelaide Hospital, South Australia.

HAMILTON, A. A., M.B., Ch.B. Dubl., has been appointed Honorary Assistant Physician to the Adelaide Hospital, South Australia.

HAYWARD, W. T., L.K.Q.C.P. Irel., has been appointed Honorary Physician to the Adelaide Hospital, South Australia.

KIRBY, S. J. J., M.D. Brux., L.R.C.P. Edin., M.R.C.S., has been reappointed Medical Officer of Health of the Hoxne Rural District Council, Fressingfield.

MILLEA, WILLIAM C., B.A. R.U.I., L.R.C.P. & S. Edin., has been appointed Medical Officer, South District of the Poplar Union.

NIESCHE, F. W., M.D. Edin., has been appointed Honorary Physician to the Adelaide Hospital, South Australia.

NORMAN, R. H., M.D. Lond., B.S., M.R.C.S., L.R.C.P., has been appointed Anæsthetist to the Tottenham Hospital.

POULTON, B., M.D. Melb., has been appointed Honorary Surgeon to the Adelaide Hospital, South Australia.

RUSSELL, JAMES, M.B., Ch.B. Glasg., has been appointed House Surgeon to the Victoria Infirmary, Glasgow.

SMITH, M. STEWART, M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Resident Medical Officer to the London Temperance Hospital.

SWIFT, H., M.D. Cantab., has been appointed Honorary Assistant Physician to the Adelaide Hospital, South Australia.

SYMONS, M. J., M.D. Edin., has been appointed Honorary Ophthalmic Surgeon to the Adelaide Hospital, South Australia.

THOMPSON, JAMES, M.B., B.S. Melb., has been appointed Resident Medical Officer to the Perth Public Hospital, West Australia.

VERCO, J. C., M.D. Lond., has been appointed Honorary Physician to the Adelaide Hospital, South Australia.

WATSON, Professor A., M.D. Paris and Gött., F.R.C.S. Edin., has been appointed Honorary Pathologist to the Adelaide Hospital, South Australia.

WILSON, JAMES, M.B., Ch.B. Glasg., has been appointed House Physician to the Victoria Infirmary, Glasgow.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ADDENBROOKE'S HOSPITAL, Cambridge.—Honorary Assistant Surgeon; also Assistant House Surgeon. Salary at rate of £50 per annum, with board, lodging, and washing.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board and washing.

BIRMINGHAM, PARISH OF.—District Medical Officer. Salary £350, rising to £400 per annum.

BRADFORD POOR-LAW UNION (SANATORIUM FOR CONSUMPTIVES), Eastby, near Skipton.—Resident Medical Officer. Salary £100, with rations, apartments, and washing.

BRENTFORD UNION.—Medical Officer and Public Vaccinator. Salary £110 per annum, with fees.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Physician to Out-patients.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £70 per annum, with board and washing.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—Four Clinical Assistants.

FIFE COUNTY COUNCIL.—Lady Lecturer of Home Nursing and Health.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium of £25.

HOSPITAL FOR DISEASES OF THE THROAT, Golden square.—Anæsthetist. Also Senior Clinical Assistant.

JERSEY GENERAL DISPENSARY AND INFIRMARY.—Resident Medical Officer. Salary £120 a year, with rooms, gas, and attendance.

LEICESTER INFIRMARY.—Clinical Clerk for six months. Honorarium of £10 10s., with board, apartments, and washing.

LONDON COUNTY ASYLUM, Banstead, Sutton, Surrey.—Junior Assistant Medical Officer. Salary £150 per annum, with board, apartments, and washing.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Medical Officer. Salary £180 per annum.

MANCHESTER SOUTHERN AND MATERNITY HOSPITAL.—Resident House Surgeon for six months. Salary at rate of £60 per annum, and board.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Physician; also Assistant Physician.

NEWARK-ON-TRENT HOSPITAL AND DISPENSARY.—House Surgeon, unmarried. Salary £90 per annum, with board and lodging.

POPLAR UNION.—Medical Officer. Salary £130 per annum.

ST. MARY'S HOSPITAL FOR SICK CHILDREN, Plaistow, E.—Resident Medical Officer, unmarried. Salary at rate of £100 per annum, with board, residence, and laundry. Also Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £80 per annum, with board, residence, and laundry.

ST. PAUL'S HOSPITAL FOR SKIN AND GENITO-URINARY DISEASES, Red Lion-square, W.C.—Honorary Assistant Surgeon.

SAMARITAN FREE HOSPITAL, Marylebone-road, N.W.—Clinical Assistants.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—House Physician for the "Dreadnought" Hospital, Greenwich. Salary £60 per annum, with board, residence, and washing. Also Junior Resident Medical Officer. Salary £40 per annum, with board, residence, and washing. Also House Surgeon for the Branch Hospital, Royal Victoria and Albert Docks, E. Salary £50 per annum, with board, residence, and washing.

SOUTHAMPTON INCORPORATION WORKHOUSE INFIRMARY, Shirley Warren.—Resident Assistant Medical Officer.—Salary £120 per annum, increasing to £130, with apartments, rations, washing, and attendance.

WARWICK COUNTY ASYLUM, Hatton, near Warwick.—Third Assistant Medical Officer, unmarried. Salary £130 a year, with board, lodging, and washing.

WESTON-SUPER MARE.—House Surgeon, unmarried. Salary £100 per annum, with board and residence.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £120 a year, with board, lodging, and attendance.

The Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory Act at Bury St. Edmunds, in the county of Suffolk.

Births, Marriages, and Deaths.

BIRTHS.

LAMB.—On Sept. 16th, at Church-street, Crewkerne, the wife of J. H. Lamb, M.B., of a daughter.

MISKIN.—On Sept. 19th, at Kennington-road, S.E., the wife of Ernest Miskin, M.B. Lond., of a son, prematurely born; survived its birth one hour.

WATKINS.—On the 16th inst., at Stone-Legh, Newton-le-Willows, Lancs., the wife of Harold E. Watkins, M.R.C.S. Eng., of twin sons.

MARRIAGES.

BENNETT—HENDERSON.—On Sept. 12th, at St. John's-wood Presbyterian Church, Norman Geoffrey Bennett, M.A., M.B., B.C. Cantab., L.D.S. Eng., to Maida Mabel, second daughter of John Henderson.

BRIGHTMORE—PHILIPS.—On Sept. 16th, at St. Gabriel's, Huime, Harry Stendale Brightmore, M.B., to Alice Marie Stella, second daughter of John Philips.

LAWSON—NEW.—On Sept. 19th, at Marylebone parish church, by the Rev. Canon Barker, Frederick J. Lawson, M.R.C.S., to Ethel F. New, daughter of G. W. New, M.R.C.S., of Harrington-square, N.W.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A QUESTION OF HOSPITAL DISCIPLINE.

To the Editors of THE LANCET.

SIRS,—We, the undersigned, beg to thank you for the trouble you have taken to investigate our case and also for your valuable expression of opinion. We do not know whether you will care to be troubled with this matter any further, but as the case appears to have created much general interest we think it only fair to ourselves to explain several points which are still not quite clear.

1. The stump was healed with the exception of a small sinus leading down to bare bone and was *not* in urgent need of treatment beyond simple dressings. The treatment for several weeks past had been to wait and the suggested future treatment was also to wait until the bone should separate as a sequestrum.

2. It is not a fact that Mr. Messiter was not aware that the man had been repeatedly insubordinate, as Mr. Messiter saw one of us (Mr. Hadley) two days after he had telephoned ordering the patient's re-admission at once. He (Mr. Messiter) then asked whether the patient had been re-admitted and Mr. Hadley answered, "No, he has not presented himself," and then asked, "Mr. Messiter, are you aware that this patient has been repeatedly and persistently insubordinate ever since his admission last May, a period of over four months," to which Mr. Messiter replied: "Yes, I am perfectly well aware." Mr. Hadley did not then make any further comment upon the patient's re-admission as he thought that as the patient had not come back and two days had elapsed since he was directed by Mr. Messiter to do so, probably he would not dare to present himself again and that would be the end of the matter, thus rendering it unnecessary, at that time, to refuse to take him in hand again and to create with Mr. Messiter any ill-feeling perhaps unnecessarily. [N.B. The whole of the above was reported by Mr. Hadley to the board, Mr. Messiter being present and confirming it.] The fact of the man's re-admission was never mentioned between Mr. Messiter and Mr. Hadley, for neither of us again saw Mr. Messiter between the time of the patient's re-admission and the meeting of the board, at which Mr. Messiter was present, but one of us (Mr. Hadley) did at once report the fact of the man's re-admission to the hospital visitors, who were also members of the board.

3. The man did not at the last moment refuse to leave the hospital but was given four or five hours to make up his mind, and on a former occasion had refused to leave but was then given another chance.

4. The refusal to treat this man did not imply inhumanity as he was able to walk about without inconvenience upon crutches and could have been treated as an out-patient at another institution, even closer to his own home than the Guest Hospital, which has no out-patient department of its own.

5. The fact that the condition of the man's stump was *not* urgently requiring treatment was pointed out to the board and Mr. Messiter, although present, did not disagree. We said that if the board wished to keep the man in the hospital we felt our positions would be untenable. To Mr. Messiter's proposition accepting our resignations and that the man be sent out we were allowed to reply, "No, if you wish the patient to remain we will go out at once." Although the board knew that it was our intention to go at once yet it directed the secretary to order the patient to leave the hospital the following day. The patient refused to remain and went the same day. We quite agree with you that our case would have been better, or looked better, if we had not been quite so hasty in leaving the same day but stayed perhaps three or four days until we knew a locum-tenent had been obtained to fill our places, although we knew that should any emergency arise there was more than one medical man in the district willing, as they had done on former occasions, to render medical assistance with very little delay.

6. Mr. Messiter also alludes to differences of opinion between himself and Mr. Hadley. We think that this, in justice to us, as he introduces it into the case, requires explanation, especially as the difference of opinion did not arise from causes arising in connexion with the treatment of patients or the duties of house surgeons as one might infer, but also upon questions of hospital etiquette or discipline.

Mr. Messiter almost invariably refused to allow the nurses to send for the medical resident staff when he came to pay his official visits to the wards and left instructions with respect to alterations or fresh treatment which he wished carried out with the nurses to deliver to us, although we were not being detained by other honorary surgeons when he was paying his visits. Mr. Hadley asked him if he would mind asking one of us to accompany him round the wards as he liked to do so and preferred to take instructions as to treatment, &c., from himself, as he (Mr. Hadley) was afraid that there was a great danger of his having the messages improperly conveyed to him by nurses, not of course wilfully, but simply because they did not understand the *rationale* and *raison d'être* of the messages they were delivering, and also he (Mr. Hadley) often wished to tell him matters concerning the progress and, perhaps, fresh symptoms in a patient which he (Mr. Hadley) seldom was given an opportunity of doing. As a result of Mr. Hadley's request he promised that in future he would endeavour to fall in with his wishes. This, however, he only did for a few times, but did not continue to do so, hence the cause of our differences.

We are, Sirs, yours truly,

ERNEST C. HADLEY, Shilton, near Coventry.
Sept. 21st, 1903. C. ROLLESTON, Gloucester Infirmary.

"WESTRUMITE."

ROAD dust is not only a nuisance but a danger to health and it is not surprising that with the advent of the motor-car various attempts should have been made to improve upon the municipal water-cart as a means of laying the dust. Recently some experiments have been made with petroleum and other substances in this connexion but they have not proved entirely satisfactory. On Monday, Sept. 21st, a demonstration was given at the Crystal Palace, Sydenham, of a new preparation for laying the dust which has been named, after its inventor, "Westrumite." This is said to consist of crude Texas oil so prepared as to render it miscible with water. "Westrumite," in the proportion of from 10 to 20 per cent. according to the traffic and the nature of the road, is mixed with water and sprayed by means of a water-cart. This spraying, the inventor claims, need take place only from five to ten times a year in order to keep down all forms of dust. It is also said that "Westrumite" acts as a preservative of road material. At the demonstration on Monday a number of motor-cars were rapidly run backwards and forwards along the Crystal Palace parade, usually a very dusty piece of road, which had been sprinkled with a 20 per cent. mixture of "Westrumite" a week previously. Practically no dust was raised and an examination of the road showed that the preparation which had been applied to it had caused the particles of dust to adhere together in what might be described as a film. "Westrumite," being of an oily nature, does not freeze and one of the great dangers of watering roads in winter is thus obviated. At Frankfort-on-the-Main and at Dresden the preparation has been tried, we are informed, with much success. The price of "Westrumite" is £10 per ton and the cost of applying a 10 per cent. solution works out at about a farthing per square yard. According to an estimate given by the inventor "in round figures 250 gallons of 10 per cent. solution will sprinkle a stretch of road 300 yards in length by four yards in width, with a one-horse cart, moving at the ordinary walking pace of a horse with a 250 to 300-gallon cart, ... and therefore a road ten yards in width and one mile in length, or 17,600 square yards, will cost £18 treated as above; and such a road would require no further treatment for two months and then only with a 5 per cent. solution (at a cost of £9)." Presumably, therefore, "Westrumite" will prove of great assistance to municipal sanitary authorities, but before a definite pronouncement can be made trials must be extended over a period of many months and on roads of different construction. We may perhaps mention that during the recent motor-car race in Ireland for the Gordon-Bennett Cup "Westrumite" proved very satisfactory. It is claimed for the preparation that it is a disinfectant.

UNQUALIFIED PRACTICE AND LEGAL RESPONSIBILITY.

THE *Market Rasen Mail* of Sept. 19th contains the following paragraph:—

THE CORONER AND THE BONESETTER.

An adjourned inquest was held at Scunthorpe on Monday into the death of a little girl named Zillah Matilda Vear of Frodingham. The inquiry had been adjourned for the attendance of Mr. S. W. Cranidge, bonesetter, who first attended the case. The medical evidence at the previous inquiry tended to show that the child had been wrongly treated by the bonesetter, and blood poisoning had set in, causing death. Cranidge was told by the coroner that he was not bound to make a statement, but witness said that he was glad of the opportunity of doing so. He had been a bonesetter for 20 years. When the child was brought to him the external examination showed no signs of dislocation or displacement with fracture. He treated it for an incomplete fracture and told the mother to bring the child again the following week. If he had been called he would have at once gone to the case. The coroner, in summing up, said the bonesetter had not had a chance with the case. There used to be an idea abroad that if a man treated a case who had not passed a medical degree and death ensued he was responsible, but that had been exploded. In this case the child had been treated to the best of his skill and knowledge, and he never saw it again after first treating it. The jury returned a verdict of "Accidental death."

We hope that the coroner has taken steps to correct what must be a misrepresentation of his remarks.

CLARKE'S SYPHON STOVES.

A CORRESPONDENT asks our readers if they will communicate to him any personal experience that they may have had of these stoves. In particular he would like to know if they have been used in hospitals or medical institutions and, if so, if they have been found satisfactory, giving adequate heat in proportion to their cost and emitting no noxious or malodorous vapour.

THE ROYAL PHOTOGRAPHIC SOCIETY.

THE forty-eighth annual exhibition of this society, which opened on Sept. 24th, is held at the New Gallery. The exhibition was, in some particulars, in a state of unpreparedness upon the day of the press view, but the various exhibits showed very well the numerous applications of photography. In the pictorial exhibition many of the landscape studies were exceedingly beautiful—notably, No. 13, a study of a storm breaking, by Mr. J. H. Canevali; Mr. Harold Hood's seascape, No. 16; "A Damp Day," by Mr. Walter Selfe, No. 22; and "A Misty Winter Day," by Mr. George Lamley, No. 58. Another very beautiful picture was Mr. W. T. Greatbatch's "Winter," No. 89; and Mr. James Shaw in his "February," No. 160, had been very happy in catching the cold effect of light on a wet leafless day. In the gallery were a number of exhibits which dealt more with the scientific side of photography, such as the reproduction in colour by the Sanger-Shepherd process of micro photographs of stained sections. Another very interesting series was supplied by the astronomical photographs from the Royal Observatory at Greenwich. Mr. Vaughan Cornish showed some of his studies of waves in water, snow, and sand, and the Rev. J. M. Bacon exhibited various studies taken from a balloon. Altogether the exhibition is well worth seeing.

KING'S COLLEGE HOSPITAL.

Messrs. W. H. Beynon and Co. of Cheltenham have sent us a copy of their Memorial Picture of King's College Hospital. The picture is a composite one and contains eight views of the interior and exterior of the building together with 20 portraits of past and present members of the staff. Altogether the picture makes a memento which should be of interest to all King's College Hospital men. It can be obtained in two states, artist's first proofs signed and proofs. Of the first state only 150 copies will be printed, the price being 42*s*. The price of the proof impressions is 31*s*. 6*d*. The artist is Mr. Harry Hill of London.

THE SANITARY INSPECTORS' EXAMINATION BOARD.

THE next examination for certificates of qualification for the appointment of sanitary inspector or inspector of nuisances under Section 108 (2) (*d*) of the Public Health (London) Act, 1891, will be held in London on Tuesday, Jan. 19th, 1904, and the four following days. Particulars will be forwarded on application to the honorary secretary, Mr. W. R. E. Coles, 1, Adelaide-buildings, London Bridge, London, E.C.

COLONIAL APPOINTMENTS ON THE WEST COAST OF AFRICA.

To the Editors of THE LANCET.

SIRS,—I am directed by Mr. Secretary Chamberlain to inform you that his attention has been called to the letter from "M.B." which appears on page 733 of your issue of the 5th instant on the subject of colonial medical appointments in West Africa. Most of your correspondent's remarks appear to relate to a period some four years ago and since then, as you are aware from the pamphlet inclosed in the letter from this department o the 3rd of February last year, the rates of salary and other conditions of service in the West African Medical Staff have been substantially revised and improved. A copy of the latest edition of the pamphlet is inclosed for convenience of reference.

I am, Sirs, your obedient servant,

Downing-street, Sept. 23rd, 1903. R. L. ANTROBUS.

THE PICRIC ACID TREATMENT OF BURNS.

To the Editors of THE LANCET.

SIRS,—The correspondence in THE LANCET regarding the toxic effects seen in some cases of burns after the use of picric acid has been very interesting indeed. The following case occurred in my practice while interim medical officer to a workhouse. I should be pleased if any of your readers could enlighten me further as to its etiology. A man, about 50 years of age, was admitted suffering from extensive burns of the second degree involving both lower limbs from above the knees downwards. He was immediately dressed with gauze steeped in equal parts of a saturated solution of picric acid and plain water. The gauze was constantly kept moist with the above solution and the dressing changed every third or fourth day. The parts kept fairly sweet with the exception of some little sloughs about the knee which were dressed with boric fomentations. The legs were practically well in about six weeks, when within a few days afterwards the patient developed all the symptoms of acute ascending Landry's paralysis and died within a fortnight.

I am, Sirs, yours faithfully,

DAVID S. E. MACNAB, L.R.C.P. & S. Edin.

Dysart, N.B., Sept. 12th, 1903.

To the Editors of THE LANCET.

SIRS,—I have been much interested in this correspondence in THE LANCET. Personally I have used picric acid in a variety of cases, notably an eczematous condition where the lesion was equivalent to that of a burn of the third degree. One patient I treated with the cold saturated solution for about a week. He then complained of malaise. He developed a rash about the forehead, face, and wrists which resembled the papular form of variola rather than measles. There was no rise of temperature; the pulse was about 108. I had to take the opinion of our medical officer of health before letting him go. The rash disappeared on changing the treatment.

I am, Sirs, yours faithfully,

Stafford, Sept. 13th, 1903. EDWARD BIGG.

MOTOR CYCLES IN WET WEATHER.

To the Editors of THE LANCET.

SIRS,—Could any of your readers who use a motor bicycle in their practice tell me whether it is practically useful in wet weather? Can one protect oneself better than on a non-motor from rain and mud and are there any difficulties with the engine arising from damp or mud?

I am, Sirs, yours faithfully,

O. CLAYTON JONES, M.B. Oxon.

Silverton, Devon, Sept. 16th, 1903.

HOSPITAL ABUSE: A SUGGESTED REMEDY.

To the Editors of THE LANCET.

SIRS,—I think it will be admitted that, notwithstanding all the agitation, all the honest efforts to deal with this admitted evil of hopital abuse and consequent waste of money, there is at present no evidence of its abatement. The casual and the out-patient departments are as much crowded as ever and there is as much waste of time and energy. I venture to bring forward a suggestion which I am sure would, if fairly carried out, meet the difficulty. There are scattered throughout the metropolitan area a number of what are really private semi-charitable dispensaries, run by gentlemen mostly not over-well off, to the great benefit of the real poor. My suggestion is that these gentlemen should be approached in order to ascertain whether they would be willing to allow their dispensaries to be used as filters for the hospitals—as, in fact, "processes," to use an anatomical term, of the great hospital system. Of course, this could not be expected without some equivalent advantage on the side of those gentlemen. This plan might be carried out by the formation in each district of an organisation consisting of these medical men, acting by means of an executive which should consist of certain of their body, with representatives of the hospital concerned, and with a certain proportion of members nominated by the Medical Provident Association. The conditions of such an organisation should be: 1. A guarantee to all who were willing to allow their dispensaries to be used that they would be assured of a minimum income of £300 a year. 2. That they would attach a provident side to their dispensaries and do their best to forward such form of thrift. 3. That the dispensaries should always during their working hours be open to students for purposes of observation and study. 4. That they would pass on to the hospitals all cases which were beyond their means of efficient treatment, it being a regulation that no cases except those of accident or extreme urgency should be received at the hospitals unless they came from such dispensaries. Local organisations of this kind might find it advantageous to buy out some of the incumbents and to put in salaried medical officers at £150, rising to £300 a year. At first, to do this, loans would have to be effected, but the returns from such purchased dispensaries would soon pay these off. This is simply a sketch plan but it would not be difficult, did space permit, to fill in details. There can, however, be no doubt but that such a scheme would prevent, by reason of the local knowledge thus brought to bear, well-to-do people crowding into, and taking up the time of, the hospitals besides causing misapplication of their funds. It would be a boon to the working man who now dreads the loss of time involved by attendance at the hospital. It would forward the propagation of the provident idea. It would help many a poor medical man who now feels himself handicapped in his efforts to do his duty to his patients for the want of means of making his work efficient. Finally, it would practically cost no one anything, but it would save waste.

I am, Sirs, yours faithfully,

Sept. 21st, 1903. W. HENRY KESTEVEN.

"SOME EARLY AUTOPSIES IN THE UNITED STATES."

AN interesting article with the above heading has been published in the August number of the *Johns Hopkins Hospital Bulletin* by Dr. Walter R. Steiner, formerly house medical officer of the Johns Hopkins Hospital. He states that the date of the first post-mortem examination performed in the United States is unknown. Toner from two researches, the results of which were published in "Contributions to the Annals of Medical Progress" (Washington, 1874, p. 57), decided that the one made by Johannes Kerfbyle, a Dutchman and a Leyden graduate, on Governor Slaughter of New York in 1691 was the first recorded, but Packard in his "History of Medicine in the United States" (Philadelphia, 1901, pp. 62-63) describes one done in 1674 as the earliest. Further references to the history of the subject are to be found in Dr. Headly's article on "Some Early Post-mortem Examinations in New England" (Proceedings of the Connecticut Medical Society, Bridgeport, 1892, pp. 207-217). Winthrop mentions in his "History of New England" (Boston, edition of 1853, vol. i., p. 384) that Marmaduke Percy of Salem was arraigned in September, 1639, for the death of his apprentice boy. "This boy was ill-disposed and his master gave him unreasonable correction and used him ill in his diet. After, the boy gate a bruise on his head, so as there appeared a fracture in his skull, being dissected after his death." The Maryland Archives contain an interesting account of a post-mortem examination done in 1643 on an Indian lad who was killed by his master, John Dandy. A jury composed of 12 men formed the inquest. Their foreman, George Binx, was a licentiate in physic and probably performed the necropsy. There was, however, another medical practitioner on the jury, Robert Ellyson, a barber chirurgeon. The report reads as follows:—

> "We find that this Indian (named Edward) came by his death by a bullett shot by John Dandy which bullett entered the epigastrium near the navell on the right side, obliquely descending & piercing the gutts, glancing on the last vertebra of the back, and was lodged in the side of Ano."

Referring to the loss of Rev. Mr. Danforth's three children in an epidemic in 1689 Cotton Mather (Magnalia, Hartford, edition of 1853, vol. i., p. 437) says that "the (until then unknown) malady of 'bladders in the wind-pipe' invaded and removed many children; by opening of one of them the malady and remedy (too late for very many) were discovered." Diphtheria and tracheotomy are probably here implied. Elsewhere in his Magnalia Mather makes the following note: "As for Mr. Stone if it were *metaphorically* true (what they *proverbially* said) of Beza, that 'he had no gall,' the physicians that opened him after his death found it *literally* true of this worthy man." This necropsy on the Rev. Mr. Stone, who was assistant pastor of the first church of Christ in Hartford, was probably performed by Dr. Bryan Rossiter of Guilford, Connecticut, in July, 1663. Dr. Rossiter had prescribed for Mr. Stone and had been paid £10 for it by the town of Hartford. It is not known where Dr. Rossiter obtained his medical education, but Dr. Headly thinks that it was in England. He went to America in 1630 with his father and was made a freeman of Dorchester, Massachusetts. In 1639 he moved to Windsor, Connecticut, became town clerk, and was admitted to practice in the State of Connecticut by the General Court, "being first tried and approved by Mr. Hooker, Mr. Stone, and old Mr. Smith of Wethersfield, in the face of the said Court." He migrated later to Guilford and was continually in hot water with the people of the town about the union of New Haven Colony with Connecticut. He finally moved to Killingworth (now Clinton), but soon returned and died in Guilford in 1672.

Dr. Rossiter's fame as a physician called him also to Hartford in 1662 to ascertain by a necropsy whether the child of John Kelly was bewitched. The child was a girl, aged eight years, who "was taken in the night following Sunday, March 23rd, 1661-2, with a violent attack of something like broncho-pneumonia. In her delirium she cried out against Goody Ayres as choking her and afflicting her, and the last words the child spoke were to that effect." Following the superstition of those times, both her parents and the townspeople thought that her death was due to some preternatural cause. Five days after the child's death Dr. Rossiter opened the body at the grave, described the appearance of the organs, noted the absence of rigor mortis, and mistook the signs of beginning decomposition for something supernatural, in the following protocol:—

"All these particulars underwritten I judge preternatural.

Upon the opening of John Kelley's child at the grave I observed:

1. The whole body, the musculous parts, nerves and joints were all pliable, without any stiffness or contraction, the gullet only excepted. Experience of dead bodies renders such symptoms unusual.

2. From the costal ribs to the bottom of the belly in the whole latitude of the womb, both the scarf skin and the whole skin with the enveloping or covering flesh had a deep blue tincture, when the inward part thereof was fresh and the bowels under it in true order without any discoverable pecancy to cause such an effect or symptom.

3. No quantity or appearance of blood was in either venter or cavity, as belly or breast, but in the throat only at the very swallow, where was a large quantity as that part could well contain, both flesh and fluid, no way congealed or clodded, as it comes from a vein opened, that I stroke it out with my finger as water.

4. There was the appearance of pure fresh blood in the back side of the arm, affecting the skin as blood itself without bruising or congealing.

5. The bladder or gall was all broken and curded without any tincture in the adjacent parts.

6. The gullet or swallow was contracted, like a hard fish bone, that hardly a large pease could be forced through.

Br: Rossiter."

Fortified by these findings John Kelly and Bethia, his wife, testify in open court on May 13, 1662, as to the alleged persecutions of their child by Goody Ayres, according to the child's testimony. Fearing then an indictment Goody Ayres fled suddenly with her husband, leaving their son, aged eight, behind them as well as all their possessions. Nothing is known of their subsequent history.

At a General Assembly held at Hartford, March 11th, 1662-63, the court allowed "unto Mr. Rossiter twenty pounds in reference to openinge Kellies child and his paynes to visit the Dep.-Governor and his paynes in visiting and administering to Mr. Talcot."

REPLETE WITH ALL MODERN CONVENIENCES.

AN advertisement has of late been appearing in the daily press concerning some sets of residential flats. The various advantages are set out in the following order. They are centrally situated, possess a courtyard, a restaurant, a kitchen with a first-class cook, experienced house stewards, and are replete with all modern requirements, including passenger lifts and speaking-tubes. There is an efficient staff of page boys and a medical man resides on the premises. We do not think that it is becoming for the medical man who resides on the premises to allow himself to be mentioned as a convenience of modern life in the same category as kitchens, page boys, and speaking-tubes, and it would be better for the practitioner, whoever he may be, to see that the item affecting himself is withdrawn from the advertisement in question.

NEW FITTINGS FOR PINCE-NEZ.

WE have received from Messrs. W. F. Stanley and Co., Railway-approach, London Bridge, a pair of pince-nez which present some new features. They have double plaquet pieces by which eight points of contact are made upon the sides of the nose. These, although the pressure may be very soft, appear to maintain a firm grip. The top bar is rigid, so that the glasses keep always in a horizontal position. We have found that the grip is very fairly firm without being uncomfortable and no doubt if the wearer were to be measured for his frames, as, of course, everyone who wears glasses should be, he would find the new grip quite satisfactory.

CHLOROFORMED CALF LYMPH.

To the Editors of THE LANCET.

SIRS,—Can any of your readers inform me if the chloroformed calf lymph prepared by Dr. Alan B. Green will remain active after keeping for from three to six months?

I am, Sirs, yours faithfully,

Arequipa, Peru, July 31st, 1903. J. DICKSON HUNTER, M.D. Edin.

SANITATION AND BUNGALOWS.

OUR first correspondent writes: "I must leave the readers of this correspondence to decide whether my statements appear to relate to facts or to 'figments of my imagination,' and also whether Mr. Swales helps his case by misquotation. I wrote in the first place as the condition of holiday and health resorts is a matter of general interest. Much of Mr. Swales' last letter can hardly be so described, so I do not wish to take up space by replying to it at length and would only add that I have not been anonymous in writing to the district and other authorities, from whom I have received very courteous attention."

Dr. E. W. Jones.—The most recent book upon the subject is "High Frequency Currents in the Treatment of some Diseases," by Chisholm Williams, published by Rebman, 1903, price 10*s.* 6*d.* net. Our correspondent might write to the honorary secretary of the British Electro-Therapeutic Society, 11, Chandos-street, W., or to the honorary secretary of the Röntgen Society, 11, Sinclair-gardens, W.

Phenad.—We are informed that radium has been used in the treatment of cancer and lupus at the Middlesex Hospital, but the quantity of the metal obtainable is so small that no opinion can yet be expressed as to its therapeutical value.

W. A. W. can only obtain such information in a trustworthy manner by speaking to the parents of undergraduates, the undergraduates themselves, and recent members of the respective universities.

S. W. W.—If our correspondent will furnish us with evidence of the complicity of the medical man in question with regard to the advertisement we will insert the paragraph.

Nemo.—We see no objection to the circular provided that its distribution is confined strictly to the patients of our correspondent.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 24th, 1903.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Sept. 18	30·44	S.E.	...	105	65	50	52	55	Foggy
,, 19	30·10	E.	0·01	103	67	55	55	57	Fine
,, 20	30·03	S.E.	...	108	67	57	59	62	Cloudy
,, 21	29·93	S.E.	...	108	67	57	57	60	Fine
,, 22	29·95	S.E.	...	70	62	58	57	59	Raining
,, 23	30·23	S.E.	0·11	83	68	59	59	60	Overcast
,, 24	30·25	S.E.	...	80	65	56	57	58	Foggy

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (28th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.).

WEDNESDAY (30th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.) Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (1st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat, (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (3rd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

FRIDAY (2nd).—WEST KENT MEDICO-CHIRURGICAL SOCIETY (Royal Kent Dispensary, Greenwich-road, S.E.).—8.45 P.M. Clinical Evening. Dr. Toogood: Cases from Lewisham Infirmary.—Dr. Dockrell: Dermatological Cases.—Dr. C. Williams: Orthopædic Cases.—Dr. L. Williams: Clinical Cases.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

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During the week marked copies of the following newspapers have been received: *Sunday Times, Liverpool Journal of Commerce, Oban Times, Ross-shire Journal, Reading Mercury, Times of India, Aberdeen Weekly Free Press, Daily Mail, Westminster Gazette, Burnley Express, Globe, Bradford Observer, Wigan Examiner, Glasgow Herald, Lincoln Herald, Windsor and Eton Express, Derbyshire Courier, Manchester Weekly Chronicle, People's Friend, Darlington Echo, Hull Times, Yorkshire Observer, Manchester Despatch,* &c.

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